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THE PROGRESS OF MEDICINE

A PLEA FOR THE CONCERTED EFFORTS OF THE CLINICIAN AND THE LABORATORY WORKER *

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Medical men the world over can be divided roughly into two groups: the majority have committed themselves to the care and treatment of the sick; the minority are engaged at research in some one of the sciences fundamental to practical medicine, devoting, very often of necessity, part of the time in teaching the principles of their science to our future practitioners. Although both groups are intensely interested in the progress of medicine, each group, curiously enough, views the work of the other either with a silent disregard or more often with disdain or openly expressed contempt. Forgetting that the best men in both groups are doing their utmost to contribute their share to the science of medicine, the clinician often ridicules the results of scientific investigation or the problem itself as devoid of practical significance; the laboratory worker in turn shows by attitude and speech his conviction that he alone is capable of making accurate observations and sound deductions.

Being allowed to mingle with both groups because of a somewhat dual nature, I have heard each group on occasion attempt to criticize the alleged shortcomings of the other without reflecting that at each occasion I was not only the listener but in part also the subject of the verbal punishment. Self-respect, if nothing more, forced me to conclude that both groups were wrong in part, and by a little reflection it was possible for me to gather evidence to support this conclusion. What there is of a science of medicine is the result of the efforts of both groups. The efforts have rarely been concerted. Had they been so, progress in medicine would have been more rapid.

VALUE OF BOTH GROUPS TO MEDICINE

1. *Our Debt to the Clinician.*—Many of our present-day academic men need to be reminded that most of our modern surgical technic, except asepsis and antisepsis in its modern sense, was perfected to a great measure without aid from the laboratory; that both the technical procedures and the instrumentarium were developed on the field of battle or in the clinic. No one will deny the value of percussion and auscultation in the diagnosis, differential diagnosis, prognosis and treatment of many diseases. Both methods were discovered and perfected by clinicians and used by them in the fields of internal medicine, surgery and obstetrics alike, to the great advantage of suffering humanity. The accurate and detailed observations of morbid processes and deductions based thereon, as recorded in the works of Hippocrates, Sydenham, Hunter and a host of others, will remain forever scientific classics in medicine. Who will deny that the discovery of anesthetics by Long, Morton, Jackson, Wells and Simpson did not lead rapidly to a better surgery; and that the preventive vaccination of Jenner and the clinical researches of Holmes and Semmelweis were fundamental for the science of immunology, bacteriology and preventive medicine? These few historical facts are commonly disregarded or forgotten by many of our scientific colleagues who may know them. During the major portion of their lives they think of the average physician and surgeon as an unscientific meddler with disease, an inaccurate observer, a prescriber of many and useless drugs, who in spite of bungling accumulates more or less dishonestly somewhat of a fortune. It is interesting to observe, however, that at times of sickness our scientific men seek both sympathy and help from such of the profession as are most skilled in surgery and who have spent their lives in the practice of medicine along the lines marked out by a Sydenham, a Laënnec, an Auenbrugger or an Osler.

2. *Our Debt to the Laboratory Worker in the Preclinical Sciences.*—The modern clinician, on the other hand, very often criticizes unjustly the entire lot of laboratory workers engaged in research in the sciences fundamental to medicine. The general nature of the attack, particularly on the anatomists, physiologists, biochemists and pharmacologists, is to the effect that their problems are of academic interest only, and often hardly that. They apparently forget that in the past many solutions of so-called academic problems have eventually contributed greatly to the diagnosis, prognosis and successful treatment of disease. To the practical men of his day, Harvey was discredited not only for the discovery of the circulation, but also for the type of animals he chose to solve the problem. Yet the establishment of his thesis revolutionized the practice of medicine. I have no doubt that the account by Leeuwenhoek, of the erythrocytes present in the circulating blood and his description of the capillary circulation and its significance, created no particular stir in medical circles. Certain it is that the discovery by the Rev. Stephen Hales of the exact value of the pressure of the blood in the blood vessels was not deemed of any more medical importance than his measurement of the pressure, exerted against a manometer, of the flow of sap in a vine. Now every

* Chairman's address, read before the Section on Pathology and Physiology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

clinician uses almost daily a hemocytometer and a sphygmomanometer. But does he remember that these useful instruments of precision are the results of investigations which in their infancy were of scientific interest only?

Who of the practitioners of the day were interested in the nature of alcoholic and acetic fermentation? And yet, as the direct result of this study, Pasteur, the chemist, created the science of bacteriology, so important in the industries and even of greater importance to us in medicine. If the electrocardiograph is of value to medicine, it should be remembered that it had its origin in the physiologic laboratory in an academic study of action currents by a capillary electrometer or string galvanometer. Who will deny that pharmacologists have contributed much to our knowledge of the action of, indications for, therapeutic use and standardization of drugs, as well as to the synthesis of new ones? Are not valuable studies of the blood and urine made possible now because of the accurate methods devised and perfected by biochemists and immunologists working at the start, and to a great extent even now, in the laboratory and not at the bedside? And yet in their inception the problems for which the methods were devised were of little practical moment. Let no one, therefore, use the term "academic" in the usual derogatory sense, for the solution of an academic problem today may be of immense practical importance tomorrow.

THE CAUSES OF THIS RECIPROCAL ATTITUDE

The nature of the daily work of the average physician obviously directs him to efforts in practical measures for the relief and cure of the sick. As a result he has neither interest in or time for the prosecution of problems whose solution promises no immediate practical application, nor has he often vision enough to appreciate the fact that any knowledge regarding the nature and mode of activity of living protoplasm, however obtained, must eventually be of practical value in the control, cure and prevention of disease; for who will deny that we will cope most successfully with disease when our knowledge of the mechanism of life is more complete? Complete knowledge of function must precede an accurate diagnosis and a scientific therapeusis. Knowledge gained empirically is of the utmost value. But in the repair of a watch, automobile or any fine piece of machinery, we get the quickest and most satisfactory results from him who is thoroughly familiar with the "anatomy," "physiology" and "pathology" of the mechanism. Empiric methods do not conduce to rapidity of progress in any field of endeavor except as these methods in turn stimulate to an investigation of the why and the wherefore of the successful result.

The essential cause, however, of this mutual misunderstanding, so prevalent among even the best representatives of both groups, is profound ignorance of each other's work. As a rule, the laboratory man has never had an occasion to observe with what care and scientific acumen the good clinician gathers and weighs his data before instituting a rational and effective therapy. The clinician, on the other hand, rarely is in a position to observe and appreciate the resource, patience and pertinacity required of the laboratory man in order to solve a research problem the results of which are subsequently so readily susceptible of practical application. And yet the history of our profession indicates that both types are important in the steady progress of medicine as a science.

THE IDEAL

There are some clinicians who gage their success in medicine by the state of luxury which a large and lucrative practice affords. Satisfied with this criterion, they view with an air of superiority those who are struggling with fundamental biologic problems, forgetting that their medical and financial success is due essentially to the type of man whom they belittle. In the academic field, on the other hand, there are a goodly number whose activities are too often entirely foreign to medicine or the special science which they are presumably cultivating. They are enjoying thoroughly their academic freedom at golf, tennis, billiards or chess. Neither the wealth of the one nor the knowledge of the other will be of value in the progress of medicine.

For progress in medicine we must have the concerted efforts of both the clinician and the laboratory worker. The former must acquire a more thorough knowledge of the fundamentals than most possess at present; the latter should certainly have a medical background or a real interest in clinical medicine as a basis for his research. Overspecialization to a point at which men are ignorant of and have no interest in even closely related preclinical subjects is, generally speaking, disastrous alike to the teaching of medical students and to research in their specialty.

The great obstacle in attaining the latter ideal consists in the practical difficulty of inducing men having some or considerable training in both the clinic and the laboratory to enter or reenter the laboratory at a great financial sacrifice, particularly in this country, where standing in a community is so largely determined by the wealth of the individual.

There is ample evidence, on the other hand, that many of the younger clinicians, on the basis of a more fundamental training, are attacking clinical problems with modern methods developed essentially in the laboratories of the fundamental sciences. But at present such researchers are often considered by their colleagues as "queer." Their efforts to advance medical science are considered by the "leaders" of the profession as of no merit compared with the successful practice of medicine.

Some knowledge of and interest in clinical medicine, however obtained, will enable the laboratory worker to follow infinitely more intelligently than at present any presentation of a clinical paper. Having this knowledge, he will need no special invitation to attend the meetings of the various medical societies. Because of detailed knowledge in several of the fundamental sciences, he will not only be able on occasion to add a helpful discussion, but in turn may find for himself problems whose solution will be of immediate and great practical value to the clinician. A high degree of specialization as it exists today is of the utmost importance for progress. But a monthly review of the research output in any of the preclinical subjects calls to mind a statement of Verworn in the first chapter of his General Physiology:

> But there is a difference whether one engages in researches of a special nature in order to help solve a problem to meet a practical or theoretical need of life, or whether one engages in special investigations, suggested fortuitously or because of any other superficial circumstance in order to determine whether anything would come out of the research and what it might be. The first is true research, the second entirely a pastime.

The problems in clinical medicine awaiting a practical solution are numerous. In these problems the highly specialized laboratory man is not interested chiefly because he has no knowledge of them. With a general medical background, he would give these problems the attention now devoted to problems of a highly technical nature in his own specialty. Whereas some men seek knowledge for its own sake, others are urged to research because of the practical importance of the knowledge sought for. But in the last analysis, all knowledge is of practical importance, the only difference being that some knowledge is more immediately practical than other knowledge. The solution of more or less practical problems in no way interferes with the development of any science, but rather hastens its development.

The clinician, on the other hand, must return to a study of the fundamental sciences for aid in the solution of his own problems. The fundamental sciences will furnish him, as in the past, with pertinent facts and accurate methods for investigation. Of the newer physiology and biochemistry he knows at present very little. Without this knowledge, a study of disease with its pathologic physiology suggests neither rational therapeutic measures nor problems for clinical investigation. In the past, bacteriology and pathology have been charged with the entire task of analyzing the cause of morbid processes and suggesting the cure—a task which these sciences alone obviously are incapable of performing. But with a deeper knowledge of all the fundamental sciences, including the physiologic group, the clinician will cease to spend much of his time at a description of what is present, helpful as it is in the diagnosis and differential diagnosis, but will begin to ask more often than at present why such signs and symptoms occur. The application of the methods of the physiologic group of sciences (biochemistry, physiology and pharmacology) to the problem will aid greatly in the final solution.

A close physical proximity of the laboratory and the clinic will be of great advantage to the laboratory worker and physician and eventually to the science of medicine. Besides engendering in both the clinician and the laboratory worker a mutual respect for the work of the other, joint conferences with a discussion of problems will suggest rational modes of attack in the clinic and laboratory at a time when the enthusiasm essential for the prosecution of any problem is at its height.

SUMMARY

As soon as the laboratory man, because of a more complete knowledge of the clinical branches of medicine, begins to appreciate the work and aspirations of the clinician, as soon as the clinician possesses a better knowledge of the fundamental sciences, then will both cease to avoid each other as bad medical company. With a common interest and a common knowledge, aided by detailed information of their own respective specialty, they will attack with vigor and effect problems of immediate practical moment. History reveals that medicine has evolved to its present status because of the work of both types of investigators. But the progress might have been faster had clinicians following the lead of Harvey and laboratory workers following the lead of Claude Bernard and others kept in sympathetic touch with one another instead of cultivating a mental aloofness or critical attitude toward one another. As a result of concerted action, scientific medicine will make more rapid strides, the education of our medical students will improve, the fundamental sciences will in turn develop at a more rapid rate—all of which will redound to the more certain control of disease and cure of the sick.

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THE CAUSES AND PREVENTION OF OTOLOGIC CONDITIONS FOLLOWING SWIMMING AND DIVING*

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One of the most important otologic problems today is the prevention of aural infections which have resulted from the tremendous increase in popularity of the public bathing places, and which can be attributed directly to the sports of swimming and diving. A survey of the literature shows that the sanitarians and public health officials have been more alert to the importance of this phase of preventive medicine than the students of otology. One might also judge by the comparatively few replies to the questionnaires sent out by a committee of the American Public Health Association that the otologists have not given them the assistance and cooperation which they desire and deserve.

Perhaps there is no department of sanitation which has been studied so long as that of public bathing places. It is a matter of historical record that the ancients had methods of filtration 400 years before Christ, and that the Chinese used alum in their public baths before the Christian era. All civilized nations have patronized public baths chiefly at the most flourishing period of their history, and in this connection it is interesting to note the 1922 report[1] of the Committee on Bathing Places by the sanitary engineering section of the American Public Health Association, which speaks of the nation-wide increase in popularity of public baths.

If one attempts to review the literature of the sanitary engineers in their work on public baths, one cannot but be impressed with the tremendous efforts which have been put forward under such heads as pool construction, the study of the bacterial quality of water, clearness of water, sputum contamination, diseased bathers, personal cleanliness of bathers, laundering of suits, sanitation of premises, and rules which the bathers must comply with before entering and while in the pool.

By the chemical treatment of the water through the use of various agents, of which liquid chlorin is most used, and such mechanical measures as filtration, the ultraviolet ray or the passage of water through an ozonating apparatus, the sanitarians now assure us that they can kill or neutralize 99 per cent. of the bacteria in a given pool. They further state that if they can keep their bathing load down to 800 gallons to each bather, the pool remains in an acceptable sanitary condition.

When we recall that there are many other factors besides contaminated water which enter into the modus operandi of the invasion of these aural infections fol-

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. American Public Health Association: Report of Committee on Bathing Places, 1922.

lowing swimming and diving, we are convinced of the fact that this subject is of vital interest to the otologists as well as sanitary engineers. However, not until there is a hearty cooperation of the otologists with the sanitarians shall we acquire success and lessen the frequency of the aural infections, which run the whole gamut of pathologic conditions, from the innocent circumscribed furuncle to an involvement of the mastoid with all its intracranial complications.

The public health authorities desire the cooperation of the otorhinologist in this movement. As evidence of this, Mr. George W. Simons,[2] who is at present chairman of the Committee on Regulation of Bathing Places of the American Public Health Association, says:

> It would be admirable if the ear, nose and throat sections of the various societies over the United States would designate a committee from their membership and thereby give greater and more careful study to many phases of the problem, such as (1) nature and extent of infections over the country, (2) epidemiologic studies, (3) suggestions as to proper standards to overcome present difficulties, and (4) some plan as to the proper education of the bather as to the care of the nose and ears while in swimming and diving.

The increase of aural infections following this swirl of popularity of bathing issues a challenge to the otorhinologist to make a closer investigation of the physics, physiology and pathology relating to the invasions of these aural complications.

There are many phases of this important subject of preventive medicine which have received very little attention, either from the public health men or from the otologists. In this paper, I shall consider factors other than a perforation of the drum membrane, which allows water to enter the tympanum, and that other etiologic factor of blowing water through the eustachian tube into the middle ear, which are frequently the ones mentioned in our textbooks.

LOWERING OF RESISTANCE BY CHILLING

The question of the duration of time one can remain in the water without reducing the body temperature and lowering one's resistance is a matter of paramount importance. We know that cold water has a veritable appetite for heat, and rapidly withdraws heat from bodies warmer than itself, and all authorities agree that prolonged cold baths cause a rapid loss of body heat. Fox [3] states that in a bath with a temperature of 70 F. of from fifteen to twenty minutes' duration, the loss of heat may be increased to fivefold that of the normal basal rate. In strong, normal persons this loss of bodily heat does not result in an immediate lowering of the body temperature, but if the bath is prolonged, the production of heat fails to keep pace with the loss, and the temperature of the body falls. Many investigators have proved that chilling lowers one's resistance. To illustrate: Pasteur rendered immune hens susceptible to anthrax by reducing their temperature to subnormal. Miller and Noble [4] report experiments on rabbits showing that they were rendered more susceptible to infection of the upper air tracts with *Bacillus bovisepticus* by chilling, and conclude that the weight of evidence proves that chilling is one of the factors that favor infection of the upper air passages. Trommsdorf [5] has also shown that prolonged chilling of the body causes a decreased motility and phagocytic activity of the leukocytes.

In this connection, it is interesting to note the influence of cold baths on the blood count. Winternitz [6] states that in an examination of eighty persons after cold baths, following which a reaction took place, a leukocytosis was observed, often amounting to a threefold increase over the count before the bath. However, in support of the fact that chilling of the body lowers the resistance, he further observed that, when the cold bath was prolonged and a reaction did not take place, as evidenced by a lack of a marked hyperemia of the skin, the characteristic increase in white blood cells did not always occur, but, instead, a leukopenia was present.

The theory that chilling of the body surfaces gives rise to a congestion and stasis in the blood vessels of the mucous membrane of the upper air passages, thus lowering resistance, has recently been proved by Mudd, Grant and Goldman [7] to be incorrect. By experimental work on man, these students, after a most exhaustive study, have proved to their satisfaction that the directly opposite occurs, and that when the body surfaces are chilled, instead of a congestion of the nasal mucous membrane, there was a reflex vasoconstriction with a resulting ischemia. They further observed that this vasoconstriction and ischemia incident to cutaneous chilling caused a fall in the temperature of the nasal and pharyngeal mucous membrane, which in some cases amounted to 6 degrees Centigrade. They concluded by saying that this chilling of the nasal mucous membrane and change in vasomotor tone might so disturb the equilibrium between the host and the bacteria of the nose as to excite infection.

NASAL AND SINUS INFECTION

As virtually all cases of otitis media are interdependent on nasal or sinus infection, we must give some thought to other factors than the lowering of the general resistance following chilling, and consider the direct effect of water on the mucous membranes of the nasal cavities.

When we study the protective mechanism of the nose and then consider the effect of water on ciliated epithelium and on the mucous glands, we at once can understand why there are so many aural and sinus infections following the sport of swimming and diving.

The protective mechanism of the nose consists mainly of two factors: (1) the secretion of a mucus which is inhibitory to bacterial growth, if not bactericidal, as claimed by some investigators, and (2) the power of the ciliated epithelium to sweep this mucus, in which the bacteria become enmeshed, toward the pharynx and esophagus to be disposed of. Anything which interferes with these two functions, whether it is mechanical, chemical or thermal, breaks down Nature's barriers and renders the nasal cavity and its appurtenances susceptible to infection.

Perhaps one of the most necessary protections against aural infections is the wavelike motion of the ciliated epithelium lining the nasal cavity and orifice and proximal end of the eustachian tube. Piersol has demonstrated that reduction of temperature or irritating chemicals will stop these vibrations, and it is

2. Simons, G. W.: Personal communication to the author.
3. Fox, R. F.: The Principles and Practice of Medical Hydrology, London, 1913; The Physiology of Bathing, Clin. J. 43: 183, 1912-1913; The Influence of Heat and Cold upon the Human Body, ibid. 44: 353, 1915.
4. Miller, J. A., and Noble, W. C.: Effects of Cold on Experimental Infection of Respiratory Tract, J. Exper. Med. 24: 223 (Sept.) 1916.
5. Trommsdorf: Arch. f. Hyg. 89: 1, 1906.
6. Winternitz, W.: Physiologische Grundlagen der Hydro- und Thermotherapie, Physikalische Therapie 3: 1906.
7. Mudd, S.; Goldman, A., and Grant, S.: Reaction of the Nasal Cavity and Postnasal Space to Chilling of the Body Surfaces, J. Exper. Med. 34: 11 (July) 1921.

evident that in diving these vibrations will be inhibited, if not entirely abolished, thereby affording an opportunity for infection to enter the tube and travel to the tympanum.

The nasal mucus, which is inhibitory to bacterial growth, is washed away when diving, and the mucous membrane is exposed to the destructive action of water. Fenton [8] has dwelt at length on the destructive action of water on cells by osmosis, and the drawing out of saline elements, causing edema and acidosis of cells and eventual cell death.

For the protection of the nasal mucous membrane against the destructive action of water while diving, no less an authority than Skillern has advised the plugging of the anterior nares. Those who have used this precautionary measure advocate it strongly and state that they do not experience the headache, sensation of pressure and the squeaking and bubbling noises which were present prior to its use. It is doubtful whether the thoughtless public will use this generally, but those who have suffered from previous aural and sinus infections from diving, and those who have any pathologic condition of the nose should either use this protective measure or else forego the pleasure of diving.

The fact that the nose has no respiratory function while the head is submerged, and that this practice entails little inconvenience, would seem to increase the probability of popularizing this custom, which has been endorsed by the professional high divers.

These factors entering into the middle ear infections have been considered with the assumption that we have a normal nose. When we add the burdens of a faulty nose with its hypertrophies, and a diseased nasopharynx and infected sinuses (and few of us have normal noses), all of these dangers are multiplied many times.

In considering this subject, I have also assumed that the water is in an acceptable sanitary condition from a bacterial standpoint as well as not overtreated chemically. Should we add the burdens of a high bacterial count or an overchlorinated pool, again a multiplicity of dangers is added.

The question of the time one should remain in bathing is an important one from two standpoints: 1. If the health officers could control the time each bather remains in the pool, they could keep down their bathing load and maintain a lower bacterial count of the water. 2. If there was a time limit, the question of a general and local lowered resistance from prolonged chilling would be largely overcome. Today, children will spend the entire morning in an indoor swimming pool or else play around it in their wet bathing suits, during which time they are not exposed to the sunshine. The chilling of the body lowers their resistance and makes them more susceptible to pathogenic organisms which may be present in the pool, or those which may be already harbored in the upper air passages. This is a different problem from that of the days of James Whitcomb Riley's "Old Swimmin' Hole," when we were clad in Nature's garb, and the body surfaces were kept warm and dried almost immediately in the sunshine.

Otitis externa, which is frequently a condition incident to swimming, is one which rarely offers the danger of a middle ear infection, though it entails much inconvenience and suffering. This condition is not necessarily dependent on infected water, for the staphylococcus is virtually always the specific organism. It is my belief that this is due to the maceration of the delicate dermis by the water, which breaks the skin and opens up an avenue of infection. The bather often inflicts additional trauma by causing an abrasion with his fingers in an effort to dry his ears.

The protection of the external auditory canal from the vitiating effect of the water will prevent the vast majority of furuncles, as well as many other infections of the external ear. This can be accomplished by placing a tuft of raw cotton, from which the natural oil has not been removed, in the external meatus. Raw cotton will not act as a siphon, as absorbent cotton does. This can be further fortified by the use of a tight-fitting bathing cap.

8. Fenton, R. A.: Sinusitis from Swimming, Tr. Am. A. Ophth. & Oto-Laryngol., 1922, p. 421.

CONCLUSIONS

1. Problems incident to swimming and diving demand the attention of the otorhinologists and public health officials. There should be a hearty cooperation of one group with the other.

2. Prolonged chilling of the body surfaces causes a reduction of temperature and lowers the general and local resistance.

3. The protective mechanism of the nose and its appurtenances against infection is definitely impaired by the destructive action of water.

ABSTRACT OF DISCUSSION

DR. HILL HASTINGS, Los Angeles: I have been interested in this subject for several years, and my first interest was really a selfish one. Years ago, when I was house surgeon in the Eye and Ear Infirmary, and began to think of a vacation, some one told me not to think of a vacation in July, because that was the time when we would get a fine crop of inflamed mastoids. And I found that to be true. There is no question that many deaths occurred that were preventable, and it is rather remarkable that most cases of mastoid disease that I have seen have been due to sea bathing rather than to pool bathing. On thinking the matter over, it looks to me as if there are two ways to attack this problem, and the way the doctor has attacked it is the better. The way it has been attacked in the past, for instance, the laws that have been passed for the control of swimming pools, have been with the main idea that the bathers who spit and blow should not do this because it might infect another bather. Dr. Taylor has gone at it the other way—and I think it is the important way—that bath houses should conform to certain requirements and regulations, but with the idea that the bather may not infect himself, because, as a matter of fact, most bathers are selfish. They do not care whether they are going to infect some one else; but if they are shown that they are likely to harm themselves, quicker results will be obtained. That is the idea of Dr. Taylor's paper—that the bather carries his own infection into the water and is dangerous to himself, and incidentally dangerous to other bathers. We have many bathing pools in California, and this state was one of the first to pass a law, in 1917, empowering the state board of health to give permits to bathing houses and to revoke them. Since that law went into effect, there has been considerable regulation done. I was told by a state board of health man, a year ago last July, that he had inspected one of our big plunges at the beach at Los Angeles. More than 4,000 people were in the plunge on July 4. He went there early on the morning of July 5 to check up that water, and found that the *Bacillus coli* index was 0.6 per cent., an exceptionally good figure, showing the effect of the chlorin apparatus and the continuous circulation of the water. So there is no question that the laws have helped immensely. We have two ways of helping, (1) education of the people, and (2) to take up this matter with our boards of health, and have them put placards in the bath houses saying that bathers with a nasal discharge or discharge from any part of the body should not go in bathing, because such bathing is dangerous to the bather himself.

Dr. Ralph A. Fenton, Portland, Ore.: Dr. Taylor's study gives admirable emphasis to the general physiologic reasons for local disturbances that follow swimming. It explains the infection of the nasal and eustachian mucosa by flora to which they are ordinarily immune. While sanitary swimming tanks are important, we must agree that bathers carry with them bacterial infections which probably are mostly to blame for ear and nasal complications. It seems to me that these things should be spread widely among the laity; especially, might I suggest, in the pages of *Hygeia*, the new health magazine of the American Medical Association.

Dr. George F. Keiper, Lafayette, Ind.: Notwithstanding the fact that we have had this large number of infections, the swimming pool is not to be condemned. When we think of the number of accidents that have been prevented, and deaths from drowning, the swimming pool has certainly justified its existence, because, too, it is a supervised method of exercise. Many persons have the idea that an open air swimming pool, exposed to the sunshine, is sufficiently protected against bacterial infection, but that is a great mistake. In our own city, we had an epidemic of otitis media following bathing in such a swimming pool, in which no precautions had been taken to treat the water chemically, and the result was this large number of cases of infection. A sanitary pool is exceedingly important, therefore, as is also the preparation of the bather beforehand. No one should ever enter a pool without thoroughly washing himself with soap and water, and thereafter standing under a shower bath, in order that he may enter the pool as clean as possible. The swimming pool has prevented many disastrous accidents, and we are learning how to keep clean, and that is worth a great deal in the prevention of disease. The doctor spoke of the otologic feature, and some of us have seen disastrous ophthalmic and nasal sequelae in the way of swimmer's conjunctivitis and frontal sinus infections. One of the worst cases of the latter I have ever seen was due to bathing in a poorly protected pool. But the pool is with us, and the thing for us to do is to regulate it and advise people how to use it.

Dr. W. M. Stookey, Salt Lake City: This is a question that has been neglected by otologists. A considerable amount of investigation is still necessary in order that otologists may have a satisfactory explanation as to the cause and reasons why we get as much otitis media and sinus infection as we do from swimming. Dr. Taylor called attention to the fact that cold water seemed to be conducive to this infection. In my city, we have two bathing places. One is Salt Lake, which is always rather cool and has an abundance of water. Whether the salt, which is a saturated solution of sodium chlorid, has anything to do with purifying the water, I do not know. I have seen practically no cases of otitis media. Other bathing places in our city are warm pools. We have within the city limits two or three pools of hot water—hot springs that come directly into the bathing pool from a rock spring that never comes to the surface until it arrives at the bathing pool. The bathers in these pools bathe in hot water. Ninety per cent. of all the cases of otitis media that I have seen have followed bathing in these pools. I have no explanation for this, but I wish to call attention to it, that it may be considered. When we solve the question reasonably well, the next question is to inform the public, in general, as to the proper methods of prevention.

Dr. Lee Cohen, Baltimore: It would seem, from the fact that otitis media so frequently follows douching of the nose with sterile salt solution, in which we are certain no bacteria are present, that the bacterial condition of the water in bathing pools is not of great importance in causing otitis media. We know it is important to have clean water. We also know that, no matter how clean the water is, when the pool is first filled, after a number of bathers go into it, dive and blow water out of their noses, the water is bound to be contaminated. So I believe that as long as we permit diving, expectorating and blowing the nose into this water, we shall continue to have infections. The occurrence of eye infection from pools is common—further proof of the danger of infection from the public bathing pool. In Baltimore, whenever a new pool is opened, we notice an increase in the number of nose and throat infections. Many of these infections follow in twenty-four hours after bathing. I have seen acute sinus infection in as short a time as this. In my opinion, the bacteria, in most instances, are in the patient's nose and throat, and the water simply acts as a medium for carrying them into the sinuses.

Dr. Cullen F. Welty, San Francisco: We are all familiar with the patient who says he blew his nose and had a sudden pain in his ear, and it went on to mastoid formation. What happened in that particular instance? He carried some of his own infection directly into his ear and produced acute otitis. We have a few bathing places in San Francisco that are very nice, indeed, quite perfect in detail; but we have had quite a few mastoid cases in people who had been to these bathing places; likewise from the ocean. In Atlantic City and Philadelphia, during the bathing season, they have plenty of cases of mastoiditis. You cannot sterilize the ocean. I believe too much importance is attached to the fact of pure water. Pure water is all right, but we are going a little too far. I believe that we get the infection from ourselves. It is the bacteria that we carry around with us that are accidentally washed into the eustachian tube that cause otitis; the infection is carried into the sinuses and produces trouble. I believe more trouble comes from that than from contamination of the water.

Dr. Dennis J. McDonald, New York: Dr. Taylor has given us a wonderful review of what engineers are doing by purification, filtration and chlorinization in attempting to sterilize the water in pools. In New York, we are trying what Dr. Taylor brings out as preventive measures to lessen this condition by the appointment of inspectors for each school, regulating the pools, the time of changing water, and the temperature of the water, to lessen these dangers to the children. I want to reiterate what Dr. Welty said, that in many cases the infection lies within the individual's nose and throat. We now have our schools charted and certain pupils are allowed to go into the pool, and certain ones are allowed to dive. We make a physical examination and charting of the children twice a year. Remember, we have some 800,000 children in the city of New York. In our larger pools, we have everything that money can buy; everything that science can bring to us; everything that can be devised by the engineering corps and architects for the protection of the children. The condition of the heart is examined, the time the child should be in the pool, the necessity of a shower taking the place of the pool, the question of going into the ocean when they go away for the summer—all this is considered.

Dr. M. M. Cullom, Nashville, Tenn.: In this question of bathing, there is the mechanical factor of the washing of the secretions of the bather himself into the eustachian tube and setting up trouble there, and there is the question of pure water. I believe that the pool is an evil, but it is an evil that we have to deal with and recognize. I do think there is no question that we get a much greater percentage of infection from pools than from running water. I can remember very well when we opened the pool for the boys at the Y. M. C. A. some years ago. We began to have boys come in with middle ear infection, and then one day we had nine boys come in whose drums we had to incise—all going into the same pool. We also had three teachers at the Y. M. C. A. who had been going in together, and each had sinus infection. I called attention to this, and it stirred up considerable trouble at the Y. M. C. A. The secretary was very much hurt that I had spoken about their pool in that way, and said they were careful. But I found that they were not taking any precautions; that the boys were going in there with trunks on, and no investigation was made. So they made an effort to keep the pool clean and make the boys take a bath before they went in, and the infections immediately lessened in number. I do not think we see anything like the number of infections now that we did when we did not understand these points. I believe the greater percentage of infections comes from bathing in pools, as it is impossible to keep a pool clean after two or three people have gone into it, especially those who dive—and they all love to dive. There is where the greatest danger lies, and I think we ought to give a warning to the public on this very important subject.

DR. E. B. CAYCE, Nashville, Tenn.: There is just one point in the discussion that has not been brought out. The chairman in his address spoke of using the lay press to bring about a proper knowledge of medicine in an ethical way to combat the immense amount of error that is published, and it would be in keeping with that idea if every man here appointed himself a committee of one to start a propaganda of education in the lay press. I think that we should each make an effort at home to see that the public is properly instructed as to the length of time that children, especially, should stay in, and also the fact that those with any infection should remain away from the pool. The public, as a whole, is rather keen on the necessity of the water being purified, but I do not think the length of time, the lowering of the body's resistance by a too long exposure to the cold, is a question with which they are familiar.

DR. ISAAC H. JONES, Los Angeles: Two cases were reported recently from Santa Barbara. In June, 1922, one of two brothers, aged 19, after being in swimming was completely deaf in the left ear. A paracentesis was done. Some vestibular response remained on that side, with obvious intracranial involvement, including no response in the vertical canal of the opposite ear, and partial vertical nystagmus. Therefore, he unquestionably had nasal infection, otitis media and extensive mastoiditis, as was proved, because we did a very extensive mastoid operation. He had mastoiditis, labyrinthitis and intracranial mischief, all in forty-eight hours. He recovered promptly. Exactly twelve months later, his brother had the same thing after swimming. The essential point in his case was that he started with a leukocytosis of about 30,000 and absolutely nothing to account for it. He said he had been in swimming, and afterward felt everything tight in his nose. Nothing could be found. After twenty-four hours, a paracentesis was done, and, shortly afterward, a mastoid operation. One month later, he began to have nystagmus and other evidences of intracranial mischief, and although we explored the cerebellum, and found great tension over the cerebellum and no tension at all over the middle fossa, we thought it might be a cerebellar abscess. Necropsy disclosed a purulent meningitis. These two boys presented the same picture in many ways. The second boy, however, had been swimming in the Y. M. C. A. pool, and the other, in the ocean.

DR. EMMA L. MERRITT, San Francisco: I own a very large swimming establishment in San Francisco, and I come in contact with owners of bathing houses and of swimming establishments. I know that they want to do everything they can for sanitation, but with rare exceptions they are commercially inclined. They have no medical education; they do not know what is right or what is wrong. I believe a great deal of good could be done by instruction in hygiene and proper sanitation of the proprietors of these establishments. As to obtaining personal cleanliness in the pool, it seems to me that that is practically impossible. You can see that people have skin diseases; you can hear if they cough, or see if their noses run, but you cannot tell what is wrong in their throats, and they all wear bathing suits and nobody knows what source of contamination they have in their bodies under that suit. Another thing, people get their mouths and noses full of water, and whether they want to or not, they will spit it out. And another thing you cannot control—people will urinate in the swimming pool. As to the chilling of the body—people in the city go into a swimming pool; perhaps they dry themselves improperly, they have wet hair, particularly the women, and then they take a long automobile ride, or they ride on the outside of a street car; it seems to me that a great deal of trouble is caused in this way. Dr. Taylor spoke about putting cotton in the external ear. I would like to ask him what he thinks of the small rubber stoppers that are used very extensively. I furnish cotton and advise bathers to use it.

DR. H. M. TAYLOR, Jacksonville, Fla.: I was pleased to have Dr. Cayce corroborate the importance of prolonged chilling as an etiologic factor in the causation of sinus and aural infections. I believe that this is a most potent factor in the causation of the conditions described in my paper. If one is sufficiently interested in this subject to take the temperature of children who have been in a pool for an hour, he will find that their temperatures register anywhere from 95 to 97 F. A reduction in temperature in these cases means a lowered resistance. Dr. Stookey raised the question that the water of Salt Lake does not cause many aural infections, and stated that the temperature of this body of water was lower than that of other bathing places in his vicinity. The fact that no one dares to dive in Salt Lake would seem to weaken his theory. In regard to the use of rubber stoppers, I feel that we are apt to get more traumatism of the epithelium by the introduction of any thing so hard.

INFECTIOUS JAUNDICE IN THE UNITED STATES *

GEORGE BLUMER, M.D.
NEW HAVEN, CONN.

In his report on an outbreak of jaundice which occurred at Halifax Court House, Va., in 1857-1858, Faulkner [1] stated that the disease occurred in Norfolk, Va., during the War of 1812. This is the first record of its occurrence in the United States, and no further outbreak is recorded until 1839, when it appeared at Jacksonville, Ala. From 1812 to 1886 there are but eleven outbreaks recorded in the American literature, and of these nine occurred south of Mason and Dixon's line, four of them in Alabama. The remaining two occurred in Orange, N. J., in 1858, and in Montgomery County, Pa., in 1860. During this period only one outbreak is recorded in any one year, with the exception of 1860, when the disease appeared in Richmond, Va., and in Montgomery County, Pa.

Beginning with the late eighties of the nineteenth century, reports become more frequent, and records of fifty-one outbreaks occurring between 1886 and 1920 have been obtained. During this period as many as seven outbreaks occurred in one year, and these were in widely separated districts. The disease no longer remained confined mainly to the Southern states, but was found all over the United States except in some of the Pacific Coast states; it also appeared during this period in the province of Ontario.

Beginning in 1920, but more particularly in 1921 and 1922, numerous epidemics were observed, of which more than 200 occurred in New York State alone, constituting the only really state wide incidence of the disease on record.

It is to be noted here that whenever troops have been concentrated in this country the disease has usually appeared, with the possible exception of the period of the War of Independence. It is not clear that the outbreak in Norfolk, Va., in 1812 was associated with the military, but the Medical History of the War of the Rebellion contains references to numerous regimental outbreaks. There were forty-seven cases in the Twenty-Seventh Connecticut Regiment for the quarter ending March 31, 1863, and outbreaks are also recorded in the Second West Virginia, the Seventieth New York, the Third Maine, the Third Missouri Cavalry and the Thirteenth Kansas regiments. The charts published by the military authorities show a great monthly variation in jaundice, and indicate the highest incidence as a rule in the autumn and winter months. In both the Spanish War and the World War the disease again made its appearance among troops.

* Read before the Section on Practice of Medicine at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Faulkner, L.: Maryland and Virginia M. J. 1: 355, 1860.

DISTRIBUTION

The information gathered in this paper probably does not give an accurate idea of the distribution of the disease, at least in the nineteenth century. There are various reasons for this. Up to a comparatively recent time, medical journals were few, physicians were widely scattered, and less frequently met and discussed their problems than is the case at present, and were most of them but little inclined to publish their observations. Then, too, the disease, being almost invariably nonfatal, was not reportable to the constituted health authorities, and even at present only three or four states require that it be reported. Much of the information on which this paper is founded was obtained by personal correspondence with physicians, nurses and those in charge of schools, colleges and other institutions. In several instances, health authorities were quite unaware that the disease had occurred within the domain under their care. These individual sources of information are naturally limited to the period covered by the memory of the living, and for that reason the information regarding recent outbreaks is much more likely to be complete than that dealing with the more remote past. However, it seems clear that, taking all these factors into account, a very considerable increase in the prevalence of the disease has occurred within the last few years. Up to the present the disease has been reported in every state except Arkansas, Delaware, Florida, Kentucky, Louisiana, Mississippi, Nevada, Oklahoma and the District of Columbia.

Fig. 1.—Distribution of infectious jaundice in the United States between 1912 and 1922.

TYPES OF OUTBREAKS

Infectious jaundice shows a wide variation as regards the type which outbreaks may assume. We may describe the different types as (1) the family outbreak; (2) the institutional outbreak; (3) the city outbreak; (4) the country outbreak, and (5) the state-wide outbreak.

In the family outbreak, the disease may be limited to a few members of a single family or may involve two or three neighboring or related families. Small outbreaks of this type may occur in large cities, or may be observed in country districts or in institutions. Considerable outbreaks may occur in schools, colleges, hospitals or other institutions, and these may be properly compared to family outbreaks, as the living conditions are essentially those of a family on a large scale. Such foci may occur in institutions situated either in the city or in the country, and may remain confined to the institution, or may occur at the same period as a more widespread epidemic.

In city outbreaks, it is not infrequently observed that certain wards or sections of the city are mainly attacked, and these may be sections that are separated from the main city by either a geographic or a social barrier. On the other hand, many city outbreaks are widespread in their distribution, and involve the suburbs and even the satelite towns.

The country outbreaks not infrequently occur in sparsely settled districts more or less remote from the main routes of travel, if the term remoteness can any longer be properly used in these days of motor communication. The widespread character of such outbreaks and their relation in some instances to the rural school is well shown in Figure 2.

The only state-wide epidemic reported up to the present is that which occurred in New York State during 1921 and 1922.

RECURRENCE OF OUTBREAKS

The literature probably gives no adequate conception of the frequency with which infectious jaundice recurs in a given district, mainly because only the large spectacular epidemics are usually reported. Some correspondents state that they expect to see jaundice recur in their district each year at a given period, and our experience in New Haven would certainly indicate that, once a district is infected, the disease may be looked for annually. This is probably true whenever a considerable number of cases has occurred in a district, but may not occur where only isolated family endemics have appeared.

SEASONAL INCIDENCE

Infectious jaundice is essentially a seasonal disease, though there is no time of year during which cases may not occur. An analysis of the records of fifty outbreaks shows that 14 per cent. occurred in the fall, 22 per cent. in the winter, and 36 per cent. began in the fall and ended during the winter months. Nearly three quarters of these outbreaks, therefore—72 per cent., to be exact—occurred in the fall and winter seasons. Only 12 per cent. began in the summer and continued into the fall, and only 6 per cent. occurred in the spring. Cases of the disease occurred all the year round in only 2 per cent. of the epidemics.

AGE INCIDENCE

In the main, infectious jaundice is a disease of childhood and adolescence. In 70 per cent. of the fifty epidemics analyzed, children and young adults only were attacked. Of this 70 per cent., 30 per cent. involved children only, 26 per cent. involved mainly children, 8 per cent. involved children and young adults, and 6 per cent. involved young adults entirely. The last group mainly occurred in schools, and in some of the outbreaks the involvement of a large percentage of the pupils and the lack of involvement of the adult personnel was most striking. In only 8 per cent. of fifty epidemics were adults only involved, and in the remaining 20 per cent., individuals of all ages were attacked.

Special reference to sex incidence needs only casual mention, as it is clear that in most large outbreaks the two sexes are equally susceptible unless institutions reserved to one sex are involved.

METHOD OF SPREAD

There is almost unanimous agreement that personal contact is the method by which infectious jaundice is usually transmitted. It is not clear how intimate this contact need be, but it is evident that association, such as occurs in families or among school children, suffices to spread the virus. In the outbreaks in country districts, where families are widely scattered, the opportunities for any other form of spread besides contact infection are very remote unless migrating insects are concerned in transmission. Leslie's[2] report of the outbreak in Andover, Me., in 1909, very strongly suggests that the disease in this instance was introduced by a single infected individual and that it spread from house to house no faster than could be accounted for by human contact. One may suspect that droplet infection occurs in some instances, as in many outbreaks an upper air passage catarrh is present. However, this is not always the case.

There is no definite evidence of spread through the alimentary tract. In the epidemic at Austin, Minn., in 1911, Collins[3] states that most cases occurred after the river water had been turned into the city mains; but the disease had made its appearance before this. On the other hand, I have the record of the disease appearing in two kitchen employees in a large institution without further spread. The incrimination of articles of food used in common has so far failed, and some outbreaks seem quite definitely to exclude it.

There is some evidence that the disease may be transmitted by fomites. Referring to the 1922 epidemic in Fond du Lac County, Wis., Miss Ellis J. Walker, the Red Cross nurse at Fond du Lac, writes:

> The first case in the school was one W. D. Mrs. D. (the patient's mother) was making some quilts for the mother of one L. W. These quilts were made while illness from jaundice was current in the D. home. A few days after these quilts had been transferred to the W. home, jaundice occurred there. So far as can be learned, there was no association between the children or of the other members of the families except through the medium of the quilts.

There is very little evidence that rats or other rodents have any direct relation to most outbreaks. It may not be generally known that there are large areas in this country in which rats do not occur, and there are reports of outbreaks in such districts occurring in seasons when other rodents, such as the prairie dog and gopher, were hibernating.

PROPORTION OF POPULATION AFFECTED

As has been stated already, outbreaks of infectious jaundice may be extremely limited or may be widely distributed throughout a city, a country district or even a state. In a few of the reports of large outbreaks, definite statements are to be found regarding the proportion of the population attacked. In the epidemic in Sherbrooke, Que., about 5 per thousand of population were infected; in the Sterling, Kan., epidemic, about 13 per thousand; in the outbreak in the Calumet region in Michigan, about 22 per thousand; in the Orange, N. J., epidemic, about 50 per thousand; and in the outbreak in Andover, Me., and vicinity., about 67 per thousand. These figures can only be regarded as approximate, for they are based on estimates of the physicians who observed the epidemics and not on figures obtained by reporting the disease to the health authorities. It is to be noted, however, that the highest incidence of the disease, so far as these particular figures indicate, occurred in a country district and not in a city. It is not to be expected that accurate figures will be obtainable until the disease has been a reportable one for some years.

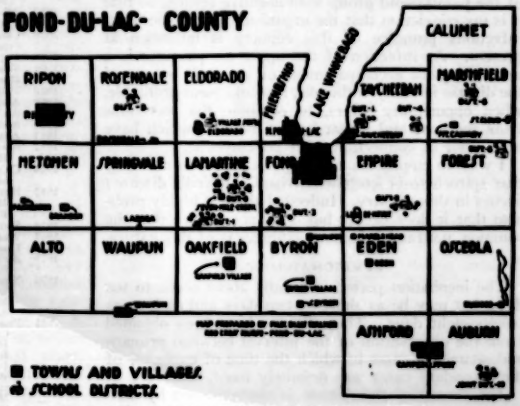

Fig. 2.—Distribution of infectious jaundice in Fond du Lac County, Wis., during two seasons: single dots, single cases; double dots, two in a family; triple dots, three in a family. Both undoubted and probable cases are shown. Chart furnished by Miss Ellis J. Walker, Red Cross nurse, Fond du Lac, Wis.

EXCITING AGENT

It has been generally assumed that the type of infectious jaundice which occurs in the country is an infection with spirochetes. This is a purely gratuitous assumption based on inference rather than observation. Because the work of Jobling,[4] Noguchi and others

2. Leslie, F. E.: Boston M. & S. J. **161**: 622, 1909.
3. Collins, A. N.: J. Minnesota State M. Soc. **21**: 305, 1911.

4. Jobling, J. W., and Eggstein, A. A.: The Wild Rats of the Southern States as Carriers of Spirochaeta Icterohemorrhagiae, J. A. M. A. **69**: 1787 (Nov. 24) 1917.

has shown that the rats in various parts of the country harbor *Spirochaeta icterohemorrhagiae*, the unwarranted conclusion has been drawn that the infectious jaundice of the United States is associated with the infected rodents. In New Haven we have had unusual opportunity for bacteriologic study of the disease at all stages because it has appeared on several occasions among the nurses of the New Haven Hospital. Utilizing all the usual methods, such as dark field illumination, cultures from the blood and urine, and animal inoculation we have never been able to isolate spirochetes at any stage of the disease. Wadsworth [5] in New York state and Symmers [6] in New York City have had similar experiences; in fact, no one has yet succeeded in isolating spirochetes from a case of infectious jaundice of the type common in the United States. Examinations of the duodenal contents have been made by at least three independent observers, with negative results. In New Haven we have also studied several patients for the presence of organisms of the paratyphoid group with negative results, so that it is my conviction that the organism causing the usual infectious jaundice of this country is unknown at present. As infection of the upper air passages is a not infrequent accompaniment of the early stages of the disease in many outbreaks, it would seem profitable, when opportunity offers, to examine the secretions from the nose and throat by the methods which have been used in connection with poliomyelitis.

I wish to emphasize at this point that I do not deny that spirochetosis icterohemorrhagica (Weil's disease) occurs in this country. Indeed, I think it highly probable that it does occur; but I do not believe that the common, nonfatal infectious jaundice is of this nature.

SYMPTOMATOLOGY

The incubation period is usually about seven to ten days, but may be as short as two days and as long as twenty-eight days. These figures have been obtained from the observation of the interval between primary and secondary cases in which the time of exposure of the secondary cases was definitely fixed.

The course of the disease is characterized by considerable variations not only in different epidemics but also in different patients in a single epidemic.

As a rule the onset is sudden, with marked gastro-intestinal symptoms (nausea, vomiting and constipation), severe headache, with pronounced pain in the back and limbs, epigastric pain and fever, which is usually not very high but may be in young children. This period of febrile gastro-intestinal manifestations usually quiets down on the appearance of the jaundice, which generally becomes manifest about the fourth or fifth day, but may be delayed as late as the twentieth day. The jaundice varies in intensity from a light yellow to a deep, almost bronze tint. It generally persists from a week to ten days, but may disappear after a few hours or may persist for six weeks or even longer. Itching may occur, but quite frequently does not.

The usual physical signs are a coated tongue, a foul breath, a rapid rather than a slow pulse, an enlarged tender liver, and in some instances a palpable spleen. The urine is generally concentrated, bile stained, and contains a trace of albumin. The feces are usually of the "putty" or "clay" type. The leukocyte count, judging from the few reported cases, varies, some patients showing a lack of leukocytosis or even leukopenia, while in others a marked leukocytosis is present, from 16,000 to 24,000. There is no striking change in the differential count.

The following variations from the usual picture are to be noted: Fever may be entirely absent in some epidemics, and in some patients in almost every large outbreak. Jaundice is absent in a certain proportion of the patients in the large outbreaks. The pulse may be slow instead of rapid. Skin eruptions of an erythematous type, followed by desquamation, may occur, and occasionally nosebleed or other hemorrhagic manifestations are present.

Relapses are rarely noted in this form of jaundice, as compared with Weil's disease. Second attacks occasionally occur. Recovery may be prompt, but in a good many outbreaks prostration is a marked feature and convalescence is protracted.

TABLE 1.—*Incidence of Infectious Jaundice, 1812-1923*

Year	
1812	Norfolk, Va.
1839	Jacksonville, Ala.
1848	Wetumpka, Ala.
1849	Rocky Mount, N. C.
1850	Jacksonville, Ala.
1857	Halifax Court House, Va.
1858	Orange, N. J.
1860	Montgomery Co. Pa.; Richmond, Va.
1880	Savannah, Ga.
1881	Birmingham, Ala.
1886	Minot, Me., and Dexter, Me.
1887	Plainfield, Mich.
1888	Troy, Me.; Readfield, Me.; Kittery Point, Me.; Geneva, N. Y.
1890	Albany, N. Y.
1897	Sparta, Wis.
1898	Calumet, Mich.; Norfolk, Neb.; Hanover, N. H.; Charlestown, W. Va.
1903	Pomfret, Conn.
1905	Sterling, Kan.; Huntington, W. Va.
1906	Montevallo, Ala.; Oaanoock, Va.
1907	Talladega, Ala.; Concord, N. H.; Pierce County, Wis.
1908	Andover, Me.; Baltimore, Md.
1909	Richmond, Ind.
1910	Rochester, Minn.
1911	Austin, Minn.
1913	Sherbrooke, Canada; Liberty, Mo.; New York, N. Y.; Hetland, S. D.
1914	Chicago, Ill.; Jacksonville, Ill.; Detroit, Mich.; Colebrook, N. H.
1915	Hartford City, Ind.; New Liberty, Ia.; Bennett, Ia.; Minneapolis, Minn.; Bismarck, N. D.; Archibald, Pa.; Kaysville, Utah.
1916	Sante Fe, N. M.
1917	Waterbury, Conn.; Holyoke, Mass.
1918	Lyons, Kan.; Seattle, Wash.
1919	Buffalo, Minn.; Dillon, Mont.; Bridger, Mont.; Lead, S. D.; Dallas, Tex.
1920	New Haven, Conn.; West Haven, Conn.; Branford, Conn.; Pocatello, Idaho; Yates Center, Kan.; Roberts, Mont.; LeGrande, Ore.; Providence, R. I.; Parkston, S. D.; Rock Springs, Wyo.
1921	Phoenix, Ariz.; Tucson, Ariz.; Conticook, Canada; Denver, Colo.; Pomfret, Conn.; East Haven, Conn.; New Haven, Conn.; New Castle, Ind.; Middletown, Ind.; Belle Plaine, Ia.; West Branch, Ia.; Cedar Rapids, Ia.; Waucoma, Ia.; Waukon, Ia.; Iowa City, Ia.; Waterloo, Ia.; Wilton, Ia.; Yates Center, Kan.; Plainville, Kan.; Govans, Md.; Pittsfield, Mass.; Howell, Mich.; New York Mills, Minn.; Huntley, Mont.; Carthage, N. D.; Chillicothe, Ohio; Salem, Ore.; Anderson, S. C.; Shelbyville, Tenn.; Highland Springs, Va.; Fond du Lac, Wis.; Sauk City, Wis.; Mauston, Wis.; River Falls, Wis. New York State, 1921-1922, more than 200 outbreaks.
1922	Los Angeles, Calif.; Berkeley, Calif.; Nevada City, Calif.; Sacramento, Calif.; Fort Lupton, Colo.; Wray, Colo.; Elizabeth, Colo.; Sedalia, Colo.; Wallingford, Conn.; New Haven, Conn.; East Lynn, Ill.; Boston, Mass.; Milford, Mich.; Meadowlands, Minn.; Redwood Falls, Minn.; Colton, Minn.; Blakeley, Minn.; Pompey's Pillar, Mont.; Billings, Mont.; Tilden, Neb.; Omaha, Neb.; Hanover, N. H.; Englewood, N. J.; Union, N. J.; Summit, N. J.; Bismarck, N. D.; Carthage, N. D.; Chambersburg, Pa.; Clarion, Pa.; Hazelton, Pa.; Freeland, Pa.; Angelton, Tex.; El Paso, Tex.; North Emporia, Va.; Portsmouth, Va.; Bellingham, Wash.; Charlestown, W. Va.; Burlington, Wis.; Readstown, Wis.; Fond du Lac, Wis.
1923	Hamden, Conn.; Liberty, Mo.; Middleburg, Va.

5. Wadsworth, Augustus; Langworthy, H. V.; Stewart, F. C.; Moore, A. C., and Coleman, M. B.: Infectious Jaundice Occurring in New York State, J. A. M. A. 78: 1120 (April 15) 1922.

6. Symmers, Douglas: Epidemic Acute Hemorrhagic Jaundice of Toxic Origin, J. A. M. A. 74: 1153 (April 24) 1920.

Complications are very rare, so rare that one is justified in suspecting that they are frequently coincidental diseases rather than complications. Nephritis has been occasionally noted. In pregnant women, abortion may take place. In the large outbreak in the Calumet region, Pomeroy[7] noted that attacks of colic in patients with cholelithiasis were much more common than in normal times.

DIAGNOSIS

In the large epidemics the question of diagnosis offers no difficulties, though in the Southern states the question of possible confusion with yellow fever might arise. However, the early jaundice, the black vomit and the pronounced urinary changes in the latter disease would seem to leave little room for error. In areas where dengue occurs, this also might be thought of before the occurrence of the jaundice, as the muscle pains in infectious jaundice may be very severe. The absence of joint symptoms and of the dengue rash and the presence of icterus should permit of differentiation. In the early literature there is one epidemic reported as infectious jaundice which was probably blackwater fever; but this error is unlikely to occur with our present knowledge.

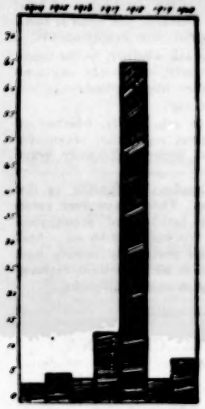

Fig. 3.—Mortality from acute yellow atrophy of the liver in the state of Alabama from 1914 to 1920, inclusive. Furnished by the Alabama State Board of Health.

PROGNOSIS

The complete absence of fatalities in most outbreaks is a striking feature. In only seven out of sixty-four epidemics did fatalities occur. Nearly all the fatal cases were in children or in pregnant women in whom abortion had taken place. It is to be noted that the clinical picture in the fatal cases was that of acute yellow atrophy of the liver or of a very severe intoxication designated by some observers as cholemia.

RELATIONSHIP TO OTHER DISEASES[8]

The relationship of this form of icterus to the so-called "catarrhal" jaundice and to acute yellow atrophy of the liver is of great interest.

So far as catarrhal jaundice is concerned, it is to be noted that the afebrile cases of infectious jaundice are clinically indistinguishable from this disease. When we consider this fact and also recall that catarrhal jaundice has a definite seasonal incidence which corresponds quite closely to that of the infectious type, we are justified in at least tentatively assuming that catarrhal jaundice is probably merely the sporadic type of infectious jaundice. Conclusive proof of this assumption cannot, of course, be obtained until the causal agent of the two conditions is isolated.

So far as acute yellow atrophy is concerned, there is little direct evidence that this condition is related to infectious jaundice beyond the fact, already noted, that patients dying from infectious jaundice may present the clinical picture of acute yellow atrophy. It is quite probable that acute yellow atrophy is not a disease entity but a syndrome which may result from the destructive action of a variety of toxic agents on the liver cells (chloroform, phosphorus, arsenic, bacterial toxins, etc.). It is not generally appreciated that the incidence of acute yellow atrophy may vary greatly from year to year in a given locality. Figure 3, showing the mortality in Alabama from acute yellow atrophy from 1914 to 1920, illustrates this point.[9] So far as can be learned, there was no unusual number of

TABLE 2.—*Incidence of Infectious Jaundice by States*

ALABAMA: Jacksonville, 1839 and 1850; Wetumpka, 1848; Birmingham, 1881; Montevallo, 1906; Talladega, 1907.
ARIZONA: Phoenix, 1921; Tucson, 1921.
ARKANSAS: None reported.
CALIFORNIA: Los Angeles, 1922; Berkeley, 1922; Nevada City, 1922; Sacramento County, 1922.
CANADA: Sherbrooke, 1913; Coaticook, 1921.
COLORADO: Denver, 1921; Fort Lupton, 1922; Wray, 1922; Elizabeth, 1922; Sedalia, 1922.
CONNECTICUT: Pomfret, 1903; Waterbury, 1917; Branford, 1920; New Haven, 1920; West Haven, 1920; East Haven, 1921; New Haven, 1921; Pomfret, 1921; New Haven, 1922; Wallingford, 1922; Hamden, 1923.
DELAWARE: None reported.
D. C.: None reported.
FLORIDA: None reported.
GEORGIA: Savannah, 1880.
IDAHO: Pocatello, 1920.
ILLINOIS: Chicago, 1914; Jacksonville, 1914; East Lynn, 1922; Aurora, 1923.
INDIANA: Richmond, 1909; Hartford City, 1915; Newcastle, 1921; Middletown, 1921.
IOWA: New Liberty, 1915; Bennett, 1915; Belle Plaine, 1921; West Branch, 1921; Cedar Rapids, 1921; Waucoma, 1921; Waukon, 1921; Iowa City, 1921; Waterloo, 1921; Wilton, 1921; Clarion, 1923.
KANSAS: Sterling, 1905; Lyons, 1918?; Yates Center, 1920 and 1921; Plainville, 1921.
KENTUCKY: None reported.
LOUISIANA: None reported.
MAINE: Dexter, 1886; Minot, 1886; Readfield, 1888; Troy, 1888; Kittery Point, 1888; Andover, 1908.
MASSACHUSETTS: Holyoke, 1917?; Pittsfield, 1921; Boston, 1922.
MARYLAND: Baltimore, 1908; Govans, 1921.
MICHIGAN: Plainfield, 1887; Calumet, 1898; Detroit, 1914; Howell, 1921; Milford, 1922; Ann Arbor.
MINNESOTA: Rochester, 1910; Austin, 1911; Minneapolis, 1915; Buffalo, 1919; New York Mills, 1921; Meadowlands, 1922; Redwood Falls, 1922; Catton, 1922; Blakeley, 1922; Lake Wilson, 1909; Cambridge, 1909.
MISSISSIPPI: None reported.
MISSOURI: Liberty, 1913 and 1923.
MONTANA: Dillon, 1919; Bridger, 1919; Roberts, 1920; Hunsley, 1921; Billings, 1922; Pompey's Pillar, 1922.
NEBRASKA: Norfolk, 1898; Tilden, 1922; Omaha, 1922.
NEVADA: None reported.
NEW HAMPSHIRE: Hanover, 1898; Concord, 1907; Colebrook, 1914; Hanover, 1922; Epping.
NEW JERSEY: Orange, 1858; Englewood, 1922; Union, 1922; Summit, 1922.
NEW MEXICO: Santa Fe, 1914.
NEW YORK: Geneva, 1888; Albany, 1890; New York, 1913 and later.
NORTH CAROLINA: Rocky Mount, 1849; Wilmington (date ?).
NORTH DAKOTA: Bismarck, 1915; Carthage, 1921; Bismarck, 1922; Carthage, 1922.
OHIO: Chillicothe, 1921.
OREGON: Salem, 1921; LaGrande, 1920.
OKLAHOMA: None reported.
PENNSYLVANIA: Montgomery County, 1860; Archibald, 1915; Freeland, 1922; Chambersburg, 1922; Clarion, 1922; Hazelton, 1922.
RHODE ISLAND: Providence, 1920.
SOUTH CAROLINA: Anderson, 1921.
SOUTH DAKOTA: Hetland, 1913; Lead, 1919; Parkston, 1920; Aberdeen, 1920; Carthage, 1920; Pinkerton.
TENNESSEE: Shelbyville, 1921.
TEXAS: Dallas, 1919; El Paso, 1922; Angelton, 1922.
UTAH: Kaysville (date ?).
VERMONT: Williston (date ?).
VIRGINIA: Norfolk, 1812; Halifax Court House, 1857; Richmond, 1860; Onancock, 1906; Highland Springs, 1921; North Emporia, 1922; Portsmouth, 1922; Richmond, 1922.
WASHINGTON: Seattle, 1918; Bellingham, 1922.
WEST VIRGINIA: Charlestown, 1898; Huntington, 1905; Charlestown, 1922.
WISCONSIN: Sparta, 1897; Pierce County, 1907; River Falls, 1921; Sauk City, 1921; Manston, 1921; Fond du Lac, 1921-1922; Burlington, 1922.
WYOMING: Rock Springs, 1920.

7. Pomeroy, E. H.: Boston M. & S. J. **139**: 107, 1898.
8. The author disclaims any originality in suggesting a relationship between infectious and catarrhal jaundice, or infectious jaundice and acute yellow atrophy. Cockayne, Gwyn and others long ago made the same suggestions.
9. Under the international classification of causes of death, acute yellow atrophy and infectious jaundice come under the same head.

cases of infectious jaundice in Alabama in 1918. However, Dr. Irving P. Lyon of Buffalo writes that after the 1921-1922 epidemic in the state of New York the pathologist at the Buffalo City Hospital noted an unusual number of cases of acute yellow atrophy. It would seem to be justifiable to conclude that infectious jaundice is one of the causes of acute yellow atrophy, but that this is simply to be regarded as a complication and a rather unusual one. In the few recorded necropsies, those of Symmers, for example, the younger patients showed liver lesions like those of acute yellow atrophy. Cockayne states that in one type of infectious jaundice in Europe, which appears to be the same disease, the fatal cases showed the symptoms *and liver* of acute yellow atrophy.

TREATMENT

There is, of course, no specific treatment. The disease must be treated symptomatically. During the febrile stage the patient should be kept in bed, and, if the fever is very high, hydrotherapy may be used. In this period the severe headache and muscle pains may require anodynes; acetylsalicylic acid or acetphenetidin and phenyl salicylate may be used, or even opiates in some cases.

The epigastric pain may be severe enough to require treatment; Waters[10] used camphorated tincture of opium with good results. During this period the gastro-intestinal symptoms need attention. A preliminary purge may be given, but repeated purgation is to be avoided, as it seems to increase the gastro-intestinal irritation. Chloroform water is of value for the vomiting.[10] The diet should be soft, and fats and sweets should be restricted. Milk disagrees with many patients. Fluids should be given freely, by mouth if possible, but by rectum if the stomach is intolerant. Nux vomica and chalybeates are of service during convalescence.

CONCLUSIONS

1. Infectious jaundice has occurred in the United States for more than a hundred years and has become widely distributed in the last two or three years.
2. It may occur in small family or institutional outbreaks or as a widespread disease with local foci scattered through an entire city, country district or state.
3. It is mainly a disease of adolescence, attacking the two sexes equally.
4. The exciting cause is unknown.
5. Fatalities are lacking in most epidemics; when they occur, the victims are usually pregnant women or young children, and the fatal cases resemble acute yellow atrophy of the liver.
6. Catarrhal jaundice, so called, is probably the sporadic type of the disease.

195 Church Street.

ABSTRACT OF DISCUSSION

DR. LEONARD G. ROWNTREE, Rochester, Minn.: The presence of epidemic jaundice has made difficult the diagnosis of various types of jaundice. I have received, through Dr. Blumer, a much clearer conception of this subject than I had previously, and I believe, as a collective review, it is the most important piece of work that has been done on this subject. We have seen many cases of jaundice in Rochester during the last few years. Dr. Stokes and Dr. Lemon have written on jaundice in relation to the treatment of syphilis. They believe that the jaundice they have seen, probably about 200 cases, was in many instances of the type Dr. Blumer described. There is room for doubt as to what proportion of cases of jaundice, particularly jaundice developing during the treatment of syphilis, is due to syphilis or to the treatment.

DR. GEORGE BLUMER, New Haven, Conn.: As long as we are unacquainted with the etiologic factor in the disease, it will be impossible to differentiate it from other varieties of jaundice. We have had the same experience in New Haven that Dr. Rowntree and Dr. Stokes and his associates have had in Rochester, but I have not been able to discover any satisfactory method of differentiating this form of jaundice from the types to which he refers.

DR. ROWNTREE: We had rather a striking instance of a differential diagnosis made by Dr. Stokes in the case of a patient under treatment. The patient developed urticaria. Dr. Stokes predicted that in a few days he would have jaundice. Jaundice appeared. The patient became extremely ill. The case resembled, in every way, acute yellow atrophy. The man died. I believe that there are many such cases. Has Dr. Blumer seen urticaria develop in such cases?

DR. BLUMER: I have not seen urticaria in connection with infectious jaundice in New Haven, and we have had a very large number of cases there, recurring year after year. But there is described, in the literature, the occurrence of skin eruptions, some being followed by urticaria, but none of them specifically described as an urticarial skin eruption.

DR. ROWNTREE: I should like to ask whether, in the treatment of syphilis experimentally induced in animals, any condition resembling infectious jaundice has resulted?

DR. BLUMER: I do not know of any.

DR. ROWNTREE: I should like to ask, finally, whether or not there occurs with any very great regularity, prognostic symptoms such as headache and upper respiratory tract involvement?

DR. BLUMER: There is a tremendous variability in the different epidemics of this disease. There have been some epidemics in which almost every patient had pronounced symptoms of that sort, headache, coryza, and so on. And there are other epidemics in which practically nobody had those symptoms, so that that is not at all a constant feature, although it does occur prominently in some outbreaks.

10. Waters, S. C.: J. Indiana State M. A. 15:430 (Dec.) 1922.

PUNCTURE OF THE CISTERNA MAGNA

REPORT ON ONE THOUSAND, NINE HUNDRED AND EIGHTY-FIVE PUNCTURES *

JAMES B. AYER, M.D.
BOSTON

Puncture of the cisterna cerebellomedullaris (cisterna magna) is undoubtedly potentially a dangerous procedure. Nevertheless, a method of approach to the cerebral meninges without operation is at times of such obvious advantage that I have in three papers advocated this procedure.[1]

After somewhat more than three years of clinical use, it seems wise to publish certain data concerning the safety, the technic and the value of cistern puncture. To make this report of greater value, a number of physicians in different cities have kindly cooperated. While most of the punctures have been made by eight men, it is estimated that at least fifty have contributed to the total number.

THE SAFETY OF CISTERN PUNCTURE

In this series of punctures in 450 patients, no death is known to have occurred directly or indirectly from

* Read before the Section on Nervous and Mental Diseases at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Ayer, J. B.: Am. J. M. Sc. 157:789 (June) 1919; Arch. Neurol. & Psychiat. 4:529 (Nov.) 1920; Arch. Neurol. & Psychiat. 7:38 (Jan.) 1922.

puncture. In only one case has hemorrhage been demonstrated. It was stated in the report that "one patient with tuberculous meningitis, in whom we had all given an unfavorable prognosis, died one week following puncture. I had diagnosed the possibility of subarachnoid block, and at necropsy it was found that the space formed by the cisterna magna was entirely obliterated. The last puncture of the series of eight, which was unsuccessful, perforated a small spinal vein, resulting in a small hemorrhage, which, in the opinion of the pathologist, could not have caused death or been a factor in the case."

Unpleasant incidents have occurred on several occasions in the experience of three of those reporting, for the most part in connection with the administration of serum. Rarely there occurs in such cases sudden dizziness with nystagmus, and at times nausea and occasionally pain in the face. These symptoms have in each instance been of only a few minutes' duration. I have had the unpleasant experience twice of observing cessation of respiration for a few seconds in patients with spinal cord tumors. In each instance the patient was under primary ether anesthesia, and respiration stopped on the withdrawal of about 1 c.c. of fluid. On two occasions patients have complained of sudden sharp pain in one entire side of the body. In none of these cases was there an after-effect of any kind, and in each the fluid was free from blood. In another case, sharp pain was experienced in the face, no fluid having been obtained at the correct depth; this was in a patient with high cervical cord glioma and, from the operative findings, it is possible that the tumor extended into the cisterna.

Distribution of Operations

	Number of Punctures	Number of Patients	Greatest Number of Punctures in One Case
Boston Psychopathic Hospital:			
Harry C. Solomon and others	98	26	18
Philadelphia General Hospital and Trenton State Hospital:			
Franklin G. Ebaugh and others	1,100	150	36
Hubert S. Howe, New York	16	4	7
Lawrence Selling, Portland, Ore.	13	11	2
Mitchell and Reilly, Philadelphia (Am. J. M. Sc. 164:46 [July] 1922)	7	3	..
W. P. Eagleton, Newark (Laryngoscope 32:1 [Jan.] 1922)	4	3	..
Rhode Island Hospital and Butler Hospital, Providence:			
Arthur H. Ruggles and others	200	25	..
Henry McCusker and others	215	25	12
Massachusetts General Hospital:			
Fifteen physicians	332	203	15
	1,985	450	

"Bloody tap" has been rarely obtained, and appears to be less frequent than from lumbar puncture. In our earlier experience with cistern puncture, blood was obtained not infrequently at a depth seemingly short of the cisterna, and caused us to desist from further effort. It has been since learned that this blood was from the suboccipital veins (extradural) and was not a contraindication to deeper puncture.

Failure to obtain fluid at the expected depth has been encountered by most of the operators, but rarely. I have failed about ten times, usually in thick-necked patients in whom it seemed unwise to persist to unexpected depths. Needless to say, these failures were in the early days of the procedure.

That repeated punctures may be safely made is the experience of all. The greatest number of punctures reported in a given case is twenty-six. Many patients have received more than ten injections of serum by this route. Attention to possible pathologic change leading to the obliteration of the cisterna should, however, be kept in mind, as indicated by the case of tuberculous meningitis cited above.

TECHNIC

The technic of cistern puncture was given in the earlier papers. For the adult, no change in technic has been advanced. In tapping the cisterna in infants, Howe developed a new technic, as he found that starting above the axis does not give the proper angle. He inserted needles into a cadaver and dissected them out. In this way he found that it was best to start at the base of the neck and direct the needle upward and slightly forward, inserting it gradually until the occipital bone is reached, and then working it forward gradually until it slipped into the foramen magnum.

While the depth at which the cisterna is reached must vary with the individual, it has been found to be less variable than in lumbar puncture. In adults, the distance from the skin is seldom less than 4 cm., and usually less than 5.5 cm. Rarely is the distance greater than 6.5 cm. Moreover, in patients on whom puncture was performed on several occasions it was found that the depth of the needle at different punctures seldom varied more than 5 mm. It is therefore advisable to note the depth at which fluid is obtained for control at future punctures.

CONTRAINDICATIONS

In any condition in which the cisterna magna is likely to be obliterated either by pressure or by adhesions, or in which the cistern may be displaced, as by tumors, the procedure must be considered as contraindicated. In that such conditions would usually lead to early increase of intracranial pressure, the most reliable guide would be the choked disk. In the presence of papilledema, or choked disk, cistern puncture should not be undertaken.

INDICATIONS FOR CISTERN PUNCTURE

This is not the place to discuss diagnostic or therapeutic procedures in connection with cistern puncture. But the uses to which this approach to the cerebral subarachnoid space has been employed should be indicated.

By far the greatest number of punctures has been made in the treatment of cerebral syphilis—especially in general paralysis—for the introduction of arsphenaminized serum. In the hands of several investigators, encouraging results have been obtained.

The next most frequent indication for cistern puncture has been in suspected compression of the spinal cord, in which case combined cisternal and lumbar punctures have been found to give early and reliable diagnostic information by the demonstration of spinal subarachnoid block (Selling, McCusker, Ebaugh, Solomon, Ayer).

In cases of meningococcus meningitic block, all authorities agree that cistern puncture should be employed, and injections of antimeningococcic serum have been made at this point with good results (Ebaugh, Mitchell and Reilly, Howe and Ayer). Antitetanic serum has been used in this manner by McCusker.

In connection with lumbar puncture of the cortical subarachnoid spaces, cistern puncture has been

employed for purposes of irrigation in suppurative meningitis by Eagleton, Selling, McCusker and Ayer. While irrigation has been shown to be possible, the results from this procedure can as yet hardly be said to be satisfactory.

Occasionally, cistern puncture has been used as a means for simple drainage (Ebaugh) and as a method for obtaining fluid for examination when, for one reason or another, lumbar puncture has been found impossible (arthritis) or inadvisable (infection of skin).

CONCLUSIONS

Cistern puncture, when carefully performed, has proved safe in the hands of a number of operators.

Repeated punctures, with the introduction of serum, may be made safely.

The technic originally advocated is satisfactory.

Indications for cistern puncture may be said to be, in the order of importance: (1) in the treatment of meningococcus meningitic block; (2) in the serum treatment of cerebral syphilis; (3) in the early diagnosis of compression of the spinal cord; (4) for obtaining cerebrospinal fluid for examination when elsewhere impossible or inadvisable, and (5) as one point of entrance to the subarachnoid space for the purpose of irrigation.

It must be remembered that those who have performed the puncture reported here thoroughly realize the possible dangers of the procedure. Without a knowledge of the anatomy of the subarachnoid spaces and an appreciation of the physiology of the cerebrospinal fluid, but especially without preliminary experience on the cadaver, cistern puncture should not be undertaken.

ABSTRACT OF DISCUSSION

DR. HARRY C. SOLOMON, Boston: I agree with everything that Dr. Ayer said as to the value of cistern puncture. It is apparently an entirely safe procedure. We have made several hundred punctures without the slightest inconvenience. We have had no reason for ever being fearful of what has happened. I would emphasize particularly that if we wish to put serum in the region of the base of the brain, the optimal locus of injection is into the cisternal space. We have very good evidence that if serum is introduced into the lumbar space, it would not reach the base of the brain in any reasonable quantity. With the cisternal injection, the fluid is brought directly in contact with the base of the brain, and the best evidences that this is so are the clinical symptoms which follow. It is very common, indeed, for a patient to complain of tingling or burning of the face. This is the result of irritation of the fifth nerve, and is a good indication that the drug reached that region. When one is dealing with cases of optic atrophy or syphilitic meningitis at the base, obviously the place to inject the drug is into the cisternal region. To my mind, this is exceedingly important, and gives us a right to hope that we shall accomplish something in this type of disorder. I should like also to corroborate what Dr. Ayer said of the value of this procedure in the case of block. One has no doubt whether or not block exists when one does a double puncture and takes into consideration both the manometric readings and the final fluid examination. Finally, I think a matter of great importance is that we now have a method of irrigation from the ventricles to the cisternal region and from the cistern to the lumbar region, or vice versa. Further, in cases of block due to meningitis, it is possible to place serum above as well as below the block.

DR. WILLIAM ALEXANDER JONES, Minneapolis: Have you had any experience in the treatment of encephalitis with puncturing the cisterna?

DR. JAMES B. AYER, Boston: No, I have not; I think it was Dr. Ebaugh who wrote me that he had one or two cases in which he had punctured the cisterna and withdrawn fluid with benefit. I could not quite see the mechanism of it and neither could he. I have had no personal experience with the cisterna puncture in encephalitis.

THE RÔLE OF PARENTAL NUTRITION IN THE CAUSATION OF RICKETS*

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AND
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The renewed interest in the solution of the rickets problem is evidenced by numerous publications dealing with the subject from an experimental as well as from a clinical and social-hygienic standpoint. In the main, these communications have tended to verify the older ideas of the causation and treatment of rickets. The rôle of calcium, phosphates and cod liver oil has again been studied through animal feeding experiments, although little that is fundamentally new has been added to our knowledge. Instead of the old term, "bad hygienic surroundings," we now think more specifically of lack of sunlight.

Not much light has been thrown on the question of the influence of heredity, using this term in a loose sense. While we are not even yet in possession of definite knowledge as to the exact parts played by calcium, phosphorus and possible antirachitic vitamins, we do know that their absence from the diet, their presence in wrong proportions, or their faulty absorption and assimilation are of real significance. In the matter of prenatal influences, however, there is a striking lack of unity of opinion, some authors being strongly opposed to this idea, while others are its ardent supporters. Glisson [1] gives the question of heredity considerable attention, but in the two centuries and more which have followed not much has been added to our knowledge in this respect. This is especially true since achondroplasia and similar affections were wrongly regarded as being fetal rickets, an error which has been made even in recent years.[2] Trousseau [3] and Ritter von Rittershain [4] were among the early physicians who were inclined to entertain the idea of a partial prenatal etiology of rickets. Rehn [5] did not feel that the evidence was sufficient to warrant a definite conclusion. In recent years, Siegert [6] and Marfan [7] have again entered the lists in favor of an hereditary influence, the former being especially positive in the matter. A suggestive case is reported in some detail by Apert and Cambassédés.[8] As a matter of fact, the conclusions of these authors are not fully warranted, since animal experiments show that the

* From the Department of Pediatrics, College of Medicine, and Department of Nutrition, Child Welfare Research Station, State University of Iowa.

* Read before the Section on Diseases of Children at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Glisson, Francis: A Treatise of Rickets, Being a Disease Common to Children, translated by Phil. Armin, London, 1668.
2. Merry and Parturier: Un cas de rachitisme congénital, Bull. Soc. de pédiat. de Paris **17**: 47 (Feb. 18) 1919.
3. Trousseau, A.: Rickets: Lectures on Clinical Medicine, translated from the edition of 1868 by J. R. Cormack, London **5**: 81, 1871.
4. Von Rittershain, Ritter, quoted by Caerny: Die Pathologie und Therapie der Rachitis, in Kraus-Brugsch: Spezielle Therapie der innerrn Krankheiten **1D**: 318, part 1, 1921.
5. Rehn: Rachitis, in Gerhardt: Handbuch der Kinderkrankheiten, Tübingen **3**: 97, part 1, 1878.
6. Siegert, F.: Die Erblichkeit der Rachitis, Jahrb. f. Kinderh. **58**: 864, 1903.
7. Marfan, A. B.: Le rachitisme congénital, Semaine méd., 1906, No. 41.
8. Apert, E., and Cambassédés: Déformations osseuses congénitales intenses avec rachitisme, Arch. de méd. d. enf. **23**: 265 (May) 1920.

nutrition of the male parent plays a minor part as far as rickets is concerned. No mention of maternal nutrition is made by them. Hess,[9] in studying the diet of the negro mother in New York, pointed out some of the deficiency, especially of calcium. He does not, however, draw very positive conclusions as to the part played by maternal nutrition; but in his recent summary of the subject,[10] he is inclined to give this aspect more consideration.

Czerny,[4] in his monograph on rickets, while not committing himself, dignifies this supposed etiologic factor with several pages of discussion, adding, however, his view that rickets is a constitutional anomaly and that exciting conditions are necessary to produce the clinical picture. Griffith [11] also gives the subject some consideration.

Among the animal experimenters, Korenchevsky [12] alone stresses the view of dietary deficiency in preceding generations as an etiologic factor in rickets in rats. Kramer and Howland,[13] however, have emphasized that the effects of deficiency in calcium, phosphorus and fat-soluble A are carried through several generations.

Among those denying a congenital origin is Wieland,[14] who refuses to admit that the craniotabes and beading of the ribs in young infants are to be regarded as evidences of rickets. He is partially supported by the views of Schmorl,[15] who fails to find histologic evidence of rickets of the new-born. In this he sharply disagrees with Kassowitz.[16]

In the course of our early studies in experimental rickets, we were unable to produce in young rats the gross bone changes characteristic of rickets (rachitis completa, Glisson), although this had been successfully accomplished by other investigators. In a series of young animals, purified rations complete in every respect but low, respectively, in calcium, phosphorus and butter oil, failed to produce gross bone changes and only slight histologic deviation from normal. Hoping to secure more definite results, we then tried a diet recommended by McCollum and Park,[17] with no better success, although the histologic pictures were perhaps more suggestive. When we saw a lantern picture of a normal rat used in experiments by these investigators, the thought suggested itself that our failure to produce the expected result might be due to a difference in the feeding of the stock animal. Accordingly, the rickets-causing diets were continued throughout one generation and into the next. These results were quite different. Animals of the second generation, receiving the diet low in calcium, presented those gross changes which we might expect in experimental rickets: collapsed chest and curvature of the long bones, with a general retarded development of the skeletal system. Histologic sections of the long bones gave the picture of advanced experimental rickets. In other words, the influence of the rickets-producing diet did not become manifest until the second generation.

9. Hess, A. F., and Unger, L. J.: The Diet of the Negro Mother in New York City, J. A. M. A. 70:900 (March 30) 1918.
10. Hess, A. F.: Newer Aspects of the Rickets Problem, J. A. M. A. 78:1177 (April 22) 1922.
11. Griffith, J. P. C.: The Diseases of Infants and Children, Philadelphia, W. B. Saunders Company 2:585, 1919.
12. Korenchevsky, V.: Experimental Rickets in Rats, Brit. M. J. 2:547 (Oct. 8) 1921.
13. Kramer, Benjamin; and Howland, John: Factors Which Determine the Concentration of Calcium and Phosphorus in the Blood Serum of Rats, Bull. Johns Hopkins Hosp. 33:313 (Sept.) 1922.
14. Wieland, E.: Zur Frage der angeborenen und hereditären Rachitis, Ergebn. d. inn. Med. u. Kinderh. 6:64, 1910.
15. Schmorl, G.: Ergebn. d. inn. Med. u. Kinderh. 6:403, 1909.
16. Kassowitz, M.: Ueber Rachitis, Jahrb. f. Kinderh. 78:194, 1912.
17. McCollum, Simmonds, Parsons, Shipley and Park: Diet No. 2249, J. Biol. Chem. 45:333, 1921.

The success of these experiments, after a rather long period of failure, naturally suggested that faulty parental nutrition might also be significant in the production of human rickets. With this in mind, we made a study of conditions in England previous to the time of Glisson's report (1653). From what we now know, we might properly say that there had been some great change in the manner of English life to account for this great increase in the incidence, and certainly in the severity, of rickets during the early part of the seventeenth century. If rickets is the result of causes which operate during infancy, then this change should have taken place about Glisson's time. As a matter of fact, it requires only a cursory reading of Traill's [18] Social England to learn that very deep seated changes began in the reign of Henry VII (1488 to 1508), about 150 years before Glisson's report, and at least 100 years before the situation became so serious as to attract the attention of clinicians.

This change in English life began with the increase in the raising of sheep—the animal with the hoof of gold—and marked the beginning of the commercial era. The laws of enclosure caused the open pastures of the rural inhabitants to be enclosed, and a large part of the farming population with its cattle was dispossessed by the landlords. The resulting increase in the price of agricultural products, the vagabondage of the evicted peasants, the movements to the cities, and the astonishing increase in the population of England from 2,500,000 to 4,000,000, "a condition which always follows poverty and desperation," were striking features of the times.

The change in living was also reflected in the diet. The amount of meat consumed, especially by the wealthier class, was a matter of comment by foreigners visiting England. Dairy products formerly used in large quantity were scorned by the wealthy and were too costly for the poor. The frequent plagues added much to the disorganization of the times. These evil conditions continued during the reigns of Henry VIII, from 1509 to 1547, and Edward VI and Mary, from 1547 to 1558, when, it is stated, the "condition of the people was wretched in the extreme." The following quotation gives a suggestive picture of the situation:

> Forasmuch as divers persons, to whom God in His goodness hath disposed great plenty, now of late have daily studied and invented ways how they might accumulate into few hands, as well great multitude of farms as great plenty of cattle, and in especial sheep, putting such land to pasture and not tillage; whereby they have not only pulled down churches and towns, and enhanced the rents and fines of land so that no poor man may meddle with it, but also have raised the prices of all manner of agricultural commodities almost double above the prices which hath been accustomed, by reason whereof a marvellous number of the people of this realm be not able to provide for themselves, their wives, and children, but be so discouraged with misery and poverty that they fall daily to theft and robbery, or pitifully die for hunger and cold.

Improvement did not take place until about 1600; but the pastoral period in England was almost ended.

The idea that the nutrition of one generation affects the members of subsequent generations is by no means a new one, either in animal husbandry or in the experimental nutrition laboratory. If rickets is a disease of nutrition, and there seems to be little doubt on that score, then a deficiency in the parent may well affect the offspring. Our animal experiments, as well as those of other workers, seem to confirm the dominating

18. Traill, H. D.: Social England, Ed. 3, London, 1896.

importance of this etiologic factor. On the human side, the observations on the diet of the New York negro mother reported by Hess, the clinical studies of Weigert, and the analysis of economic conditions in England previous to Glisson's time all indicate the significance of parental nutrition in the causation of rickets. The economic changes with their direct effects on the manner of living of the English people were operative for at least two generations before rickets became so widespread as to assume the proportions of a definite clinical entity.

What are the present day conditions? It requires only the most cursory analysis of the average modern diet to note that mineral and other deficiencies are the rule today rather than the exception, and it is not surprising that rickets of mild degree is so common a manifestation as to escape the attention of or, at least, arouse little comment from the average observer.

In the absence of more detailed experimentation, one can only speculate as to the mechanism of parental nutrition in the causation of rickets in the young. Is the child born with rickets, or merely with too small a store of building material (calcium depot) for the skeleton, so that rickets develops when conditions become unfavorable or when a dietary error exists? No matter what the mechanism of action is, we know from our animal experiments that the young of properly nourished mothers are less susceptible to this dystrophy even though they are badly fed. If it be conceded that faulty parental nutrition is one of the chief causes of human rickets, then we have in our hands the most hopeful method of treatment, prophylactic rather than curative.

CONCLUSIONS

1. In a series of animal experiments, it was possible to produce gross rickets by faulty diet only in the second generation, because the parent stock received in abundance a diet containing all the constituents necessary to proper nutrition.

2. Conditions in England before the time of Glisson, together with recent clinical observations, tend to point out that in human pathology, causes existing for more than one generation are necessary in the production of rickets. To quote the words of Glisson: "But omitting all diligent search into the several kinds of causes, we purpose to contract this our discourse chiefly to two heads. The former containeth the Infirmities and the diseased dispositions of the Parents, which perhaps have so great an influence upon the Children, that they suppeditate at least a proneness to this effect, and infer an aptitude to fall into it, if they have not actually fallen into it from their very birth."

3. This conception, if correct, is the more fruitful in that it enables us to attain the ideal of treatment, namely, prophylaxis.

ABSTRACT OF DISCUSSION

DR. WILLIAM PALMER LUCAS, San Francisco: More than a century ago it was pointed out that the nutrition of the mother played a most important part in the development of rickets. This problem of the maternal nutrition is a most important one. In our own laboratory, Dr. Jones has found something that I am going to ask her to tell you about, because it is in line with the experiments of Dr. Byfield and Dr. Daniels. The same thing has been reported by Hess. I think that McCollum also has pointed out the importance of the maternal nutrition in this condition. As Dr. Jones, in talking to me this morning about it, aptly expressed it, this is transferring the problem from the pediatrician to the obstetrician. We must ask the obstetrician to help us in this field of maternal influence on rickets.

DR. MARTHA R. JONES, San Francisco: At a recent meeting of the Western branch of the Society for Experimental Biology and Medicine we reported that severe rickets could be induced in normal puppies on a diet consisting of bread, milk, meat, butter fat, orange juice and alkaline salt mixture, the composition of which was based on ash analyses of cow's milk, except that the phosphorus was omitted. On the same diet, except that sufficient hydrochloric acid was added to neutralize the excess of alkali in the salt mixture, normal bone development resulted. Parallel experiments on rats with both these diets invariably were negative, even the second and third generations showing no signs of rickets. More than a year ago, a litter of nine normal puppies was suckled by the mother until they were 5 weeks of age. The following ten months, she was fed on meat almost exclusively, a diet which is markedly deficient in calcium, and at the end of that time she had another litter of nine pups. When the puppies were about 2 weeks old, it was evident that the mother's milk supply was insufficient, and supplementary feedings had to be given. All of the nine puppies survived, but before they were placed on the experimental diet, each one showed definite clinical and roentgenographic signs of rickets. Another female dog fed on meat exclusively during pregnancy had a litter of twelve pups, each one of which showed unmistakable signs of rickets at 4 weeks of age. The fact that the bony structures of both these mothers had been called on to meet the mineral requirements of the growing fetuses was strikingly demonstrated by the large number of carious teeth that developed during the gestation period. When the puppies of these two litters were placed on experimental diets, those receiving a relatively small amount of alkali in the salt mixture—an amount which normal subjects handle with ease—developed severe rickets rapidly, in some cases in less than two weeks; whereas, the puppies fed on the basal diet without the salt mixture showed marked improvement. While our experiments are not sufficiently numerous to permit us to draw final conclusions, we are of the opinion that the diet of the mother during pregnancy is a more important factor than heredity in predisposing the young to rickets.

DR. JOHN A. FOOTE, Washington, D. C.: I have a hobby for collecting pictures of infants, particularly pictures painted by the old masters. Some time ago I read that the paintings of the middle ages, while not particularly inspiring as paintings, were interesting as literature. The thought occurred to me that possibly something might be learned from these paintings with regard to the history or the occurrence of some of the diseases of children. Since then I have studied paintings of children made since the thirteenth century. Pictures of children made before that period amounted to little. With the rise of the cathedral building period in Europe in the thirteenth century, we began to have some very remarkable pictures of children. I have found pictures of children with rickets in the fourteenth, fifteenth and sixteenth centuries. Glisson wrote his paper on rickets in 1650. I have some very interesting pictures made one or two hundred years before that. An Ephesian author spoke of rickets in the second century. He said that the children in the cities had more crooked limbs than the children in the country. There are some excellent pictures showing rickets. In the sixteenth century a German painter, who had been down to Italy, apparently, judging from the picture, painted a child that had decided rickets. There are pictures of cherubim with rickets. In a picture made by a Belgian painter, one can see not only the rickets in the child, but also the cause of the rickets—the pap bowl and the spoon on the table. As Dr. Byfield has said, the rise of industrialism in England and in the low countries, the increased population in England, and the influence of wars were the things that produced rickets in Europe, and that are still producing rickets in Europe, and that will produce rickets in Europe for perhaps another generation, through malnutrition of the parents. Rickets is, as the German calls it, a folk disease, a disease of the people dependent on economic conditions and not only possibly but probably dependent on malnutrition in the parent as well as in the child.

CONGENITAL OBSTRUCTION OF THE LARYNX AND PHARYNX *

GORDON B. NEW, M.D.
ROCHESTER, MINN.

Six cases are here reported which illustrate different types of congenital obstruction of the larynx and pharynx, a rare condition, which may be due to various causes. Although the causes lack similarity, one common symptom, respiratory obstruction in the new-born infant, was present in all of them and has formed the basis for the present study.

REPORT OF CASES OF LARYNGEAL OBSTRUCTION

CASE 1.—*Congenital laryngeal stridor. History.*—J. B. H., a boy, aged 8 weeks, was brought to the Mayo Clinic, Dec. 21, 1922, because of trouble in breathing which had been evident since birth. He made a slight croaking noise on inspiration. He had not had severe spells, and did not get blue, but had some trouble in nursing on account of the difficulty in getting air.

Examination.—Laryngoscopic examination revealed the epiglottis folded on itself, and the aryepiglottic folds almost in apposition. These moved up and down on respiration, almost approximating on inspiration (Fig. 1).

Treatment.—The condition did not demand treatment, and the child is gradually improving.

CASE 2.—*Middle line (bilateral abductor paralysis) position of the true cords. History.*—I. P., a girl, aged 10 months, was brought to the clinic for examination, Jan. 20, 1920, on account of difficulty in breathing which was noticed at birth. The mother had one normal child, aged 4 years, and one child had been stillborn. There was no history of syphilis. The patient was a full-term child; labor had been difficult, and the child blue at birth. She weighed 7 pounds (3.2 kg.). About once a month since birth, she had had severe spells, coming on slowly, when she became blue and gasped for breath. The chief difficulty seemed to be in inspiration. The spells lasted a few minutes and ended with a long, crowing inspiration, and there was always some difficulty in inspiration between the spells. The child did not sit up alone, and did not seem to notice things as a child of its age should, but was otherwise well.

Fig. 1 (Case 1).—Congenital laryngeal stridor in a child, aged 8 weeks.

Fig. 2 (Case 2).—Middle line (bilateral abductor paralysis) position of the true cords in a child, aged 10 months.

Examination.—The child was underdeveloped mentally and physically, with a noisy, rattly respiration. Roentgenograms of the chest were negative, and the Wassermann reaction for both mother and child was negative. Laryngoscopic examination, Jan. 22, 1920, revealed the epiglottis folded on itself. Both cords were in the middle line, and moved up and down on respiration. There was a very small slit to breathe through. The aryepiglottic folds were not adjacent as in congenital laryngeal stridor. The general condition was good. Neurologic examination revealed constitutional inferiority. It was impossible to make an examination of the fundi. Laryngoscopic examinations were repeated, February 4, March 1 and May 27, with identical findings. The child's symptoms did not change materially between these examinations (Fig. 2).

Treatment.—No treatment was given, and at no time was a tracheotomy indicated.

Dec. 26, 1922, about two years from the time of the original examination, the mother wrote that the child was perfectly healthy, weighing 37 pounds (17 kg.), and having no difficulty in breathing. Her voice was normal when she cried, but she was mentally deficient. She had had but one spell of difficulty in breathing, which occurred one week after the last examination here, May 27, 1920. A letter from the home physician corroborates the mother's statements.

Fig. 3 (Case 3).—Subglottic diaphragm in a child, aged 2 years.

Fig. 4 (Case 4).—Angioma of the larynx in the left subglottic region in a child, aged 9 months.

In reviewing the literature on congenital laryngeal stridor, it would seem that there are two types of conditions included under this heading. First, the type in which the obstruction is at the upper laryngeal aperture, due to the epiglottis and aryepiglottic folds, and, second, the type in which the obstruction is at the glottis. The outstanding papers on the first type are those by Thomson and Turner,[1] and Sutherland and Lack,[2] and, in this country, by Greene,[3] Newcomb,[4] Koplik,[5] Reardon[6] and Iglauer.[7] The characteristic symptoms of this condition are the croaking sound accompanying inspiration, with a possible noise on expiration, which, however, may be noiseless. As a rule, the child never becomes real dyspneic or cyanotic. The condition gradually improves, and disappears during the course of the second year. According to Reardon, death may occur, owing to stenosis. Different opinions are held by Thomson and Turner, and Sutherland and Lack, regarding the etiology of this condition. Thomson and Turner hold that the primary element in the causation of this condition is a disturbance of the coordinating of the respiratory movements, probably due to some developmental backwardness of the cortical structures which control them; and that the valvular action of the upper aperture of the larynx and the falling in of its lateral walls during inspiration is the cause of the obstruction, but that it is an acquired condition, the result of an incoordinated, stammering breathing. Experimentally, using infant cadavers, they have been able to produce this deformity.

* From the Section on Laryngology, Oral and Plastic Surgery, Mayo Clinic.

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. Thomson, J., and Turner, A. L.: On the Causation of the Congenital Stridor of Infants, Brit. M. J. **2**: 1561-1563, 1900. Turner, A. L.: A Discussion on Congenital Stridor (Laryngeal and Tracheal), ibid. **2**: 1485-1488, 1906.
2. Sutherland, G. A., and Lack, H. M.: Congenital Laryngeal Obstruction, Lancet **2**: 653-655, 1897.
3. Greene, D. C.: Congenital Inspiratory Stridor, Boston M. & S. J. **148**: 638-640, 1903.
4. Newcomb, J. E.: Congenital Laryngeal Stridor, M. Rec. **64**: 127-130, 1903.
5. Koplik, Henry: Congenital Laryngeal Stridor: A Contribution to the Pathology of the Affection, with Report of an Autopsy on a Case, Arch. Pediat. **22**: 881-889, 1905.
6. Reardon, T. J.: Congenital Laryngeal Stridor, Am. J. M. Sc. **134**: 242-253, 1907.
7. Iglauer, Samuel: Epiglottidectomy for the Relief of Congenital Laryngeal Stridor, with Report of a Case, Laryngoscope **32**: 56-59, 1922.

Sutherland and Lack hold that the deformity in these cases is a congenital one, and not a neurosis. Both agree that the laryngeal condition is the immediate cause of the obstruction and that the obstruction is due to two factors: (1) the malformation of the upper aperture of the larynx, and (2) the flaccidity of the structures.

Koplik believes that the anatomic findings are sufficient to account for the symptoms, and believes that Thomson and Garner's theory needs more confirmation. Iglauer has recently reported a case in which he removed the epiglottis and cleared up the obstruction in this way. This was the first time that this treatment had been employed.

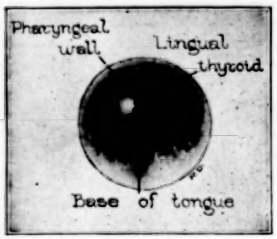


Fig. 5 (Case 5).—Lingual thyroid in a child, aged 3½ months.

Considering the second type, in which the obstruction occurs at the glottis, Robertson [8] believes that the trouble is due to a temporary bilateral abductor paralysis. No laryngeal examination, however, was made in his group of cases. Löri [9] reports twelve cases of infants in which the cords were together for only a few seconds at a time, as a clonic spasm of the glottis, and believes that this condition is a symptom of various diseases, such as chorea and rickets. The condition cleared up in from two months to two years. There was no paralysis at any time, and no treatment of note was given.

Semon [10] states that the condition is not a paralysis, but a clonic spasm, and that bilateral paralysis in infants has not been definitely established, but that it is probably a clonic spasm of the glottis.

Ashby [11] holds that the muscles that regulate the size of the glottis fail to coordinate with the muscles of respiration, so that laryngeal obstruction results. He does not believe that there is any evidence of the laxity of the laryngeal structures, or that the sucking in of the aryepiglottic folds is a factor in this condition.

Cautley [12] states that the persistence of the stridor during sleep would argue against the neurosis theory.

McBride [13] believes that the cases of laryngeal stridor are due to spasm and not to paralysis, and that the condition is similar to a laryngismus stridulus, due to cortical irritation.

Case 1 would seem quite typical of the first type of laryngeal stridor. Case 2, however, in which the cords were found in the middle line, and remained in this position on repeated examinations, does not simulate the second type. The condition would seem to be a congenital middle line position of the cords, as seen in bilateral abductor paralysis. The child was undeveloped mentally, and the laryngeal condition gradually improved and ultimately cleared up. Possibly, therefore, the lack of mental development was the cause of the laryngeal condition.

Case 3.—*Subglottic diaphragm. History.*—E. H., a girl, aged 1 year, examined, Aug. 10, 1921, was a normal-birth, full-term child, well developed and well nourished, but breathing through a tracheotomy tube. She had had asthmatic breathing at intervals since birth, but at other times no dyspnea had been noted, except after coughing. Occasionally she had a croupy cough. Three and a half months before examination, an emergency tracheotomy had been made elsewhere, before a laryngoscopic examination was possible. One month later it was impossible to remove the tracheotomy tube, and this had been attempted several times without success. A tentative diagnosis of thymus obstruction had been made, and radium had been used outside the neck. Repeated Wassermann reactions and cultures of the throat had been negative.

Examination.—At the time of the child's examination, her general condition was good. The tracheotomy tube was in position. The roentgenogram of the chest was negative, although there was a possible, but indefinite, shadow high in the right chest, which might be thymus. Laryngoscopic examination revealed an obstruction in the subglottic region on the right side, which was whitish and might have been the tissue above the tracheotomy tube. When the tube was held forward, or when a probe elevated the area, the child breathed without obstruction. No neoplasm was visible.

On account of the indeterminate diagnosis and the possibility of some type of extrinsic tracheal tumor, no attempt was made to remove the tracheotomy tube. Roentgen-ray and radium treatment outside the neck was advised, and further examination in from three to six months. The child returned for the second examination ten months later, June 27, 1922, with the tracheotomy tube in place. Laryngoscopic examination revealed a diaphragm across the anterior part of the larynx above the tracheotomy tube. Breathing was not obstructed when the tracheotomy tube was removed. The diaphragm did not seem cicatricial, and was of sufficient size to have caused obstruction when the lumen of the larynx and trachea were smaller.

Treatment.—July 5, 1922, the tracheotomy tube was removed, and the child breathed quite well. On this account it was not thought necessary to remove the diaphragm. Later, the tracheal fistula was closed. A letter from the mother states that the child is perfectly well, and has had no further trouble (Fig. 3).

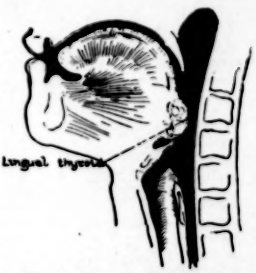


Fig. 6 (Case 5).—Location of a lingual thyroid.

It would seem in this case that the subglottic diaphragm was congenital, causing the original obstruction, and that, as the lumen of the larynx and trachea increased, the diaphragm had ceased to cause obstruction so that removal of the tube ultimately became possible.

In 1915, I [14] reported a case of congenital diaphragm of the larynx, at the same time reviewing the literature, and discussing the etiology. Small membranes have been seen in the anterior part of the larynx in the subglottic region, and not in any way connected with

8. Robertson, W.: Laryngeal Paralysis in Infants, Lancet **2**: 600-601, 1892.
9. Löri: Ueber den clonischen Glottiskrampf der Neugeborenen und Säuglinge, Allg. Wien. med. Ztg. **25**: 579, 1890.
10. Semon, F.: Handbuch der Laryngologie und Rhinologie, bearbeitet von P. Bergengrün, E. von Bergmann (et al); edited by Paul Heymann, Vienna, Holder **1**, 1896-1898.
11. Ashby, H. A.: Discussion on Congenital Stridor (Laryngeal and Tracheal), Brit. M. J. **2**: 1488, 1906.
12. Cautley, E.: A Discussion on Congenital Stridor (Laryngeal and Tracheal), Brit. M. J. **2**: 1488, 1906.
13. McBride, P.: Diseases of the Throat, Nose and Ear: A Clinical Manual for Students and Practitioners, Ed. 2, Edinburgh and London, Y. J. Pentland, 1894.
14. New, G. B.: Congenital Diaphragm of the Larynx, St. Paul M. J. **17**: 100-104, 1915.

the cords. Case 3 would seem to be one of this type. The possibility of a cicatricial web above the tracheotomy tube must be considered, but the condition did not resemble a cicatrix, and the history would seem to exclude this.

Wood [15] reports a congenital, subglottic diaphragm in a new-born infant which required tracheotomy, but later, by repeated dilating, the tracheotomy tube was removed. Other laryngeal webs have been reported since that time, but nothing of unusual interest has been brought out.

Fig. 7 (Case 6).—Congenital flaccid tongue and palate: A child, aged 2 months and 3 weeks, after two weeks' gain with the celluloid appliance in the pharynx. Pieces of adhesive plaster hold the cross-piece of the celluloid appliance in place, by means of linen threads.

CASE 4.—*Angioma of the larynx. History.*—G. R., a girl, aged 9 months, was brought to the clinic for examination, Dec. 11, 1916. At the age of 3 months, a rattling in the child's throat and difficulty in breathing had been noticed by the parents. This seemed worse when she was lying down. She had never been really blue, and seemed well otherwise.

Examination.—The child appeared well nourished but had slight dyspnea. A roentgenogram of the chest was negative for thymus. Laryngoscopic examination revealed a dark bluish tumor in the left subglottic region, bulging to the middle line of the trachea. The mucous membrane was smooth and the tumor was sessile, about 1.25 by 1.8 cm. A clinical diagnosis of angioma was made (Fig. 4).

Treatment.—The child's symptoms did not demand immediate relief, so that radium treatment was used outside the neck directly over the area in the larynx. Jan. 13, 1917, a 50 mg. tube of radium was applied for five hours with 2 mm. of lead and an inch wood distance. A letter from the mother three years later stated that the child had had no further trouble in breathing.

Congenital obstruction of the larynx due to any form of neoplasm is very unusual. Clark and I,[16] in 1919, reported three cases of angioma of the larynx. Moore [17] states that there are seventy-six cases reported in the literature. Radium is the treatment of choice.

REPORT OF CASES OF PHARYNGEAL OBSTRUCTION

CASE 5.—*Lingual thyroid. History.*—R. K. S., a boy, aged 3½ months, was brought for examination, April 24, 1922, on account of difficulty in breathing and swallowing which was noticed during the second week of life. The pregnancy had been normal. The symptoms had progressed until at the time of examination the child had constant difficulty in breathing, although at times it was not very marked. The boy had never become blue.

Examination.—The child was fairly well nourished, with a slight inspiratory stridor and slight grunting on expiration. These symptoms were occasionally absent for a few minutes at a time. Laryngoscopic examination revealed a soft, rounded tumor at the base of the tongue, just above the epiglottis, with normal epithelium over its surface and a few large blood vessels. The tumor looked and felt like lingual thyroid. The larynx was normal (Figs. 5 and 6).

Treatment.—No treatment was given, as the child's dyspnea was not marked enough to indicate operation. The parents were advised that, as the child grew older, the enlargement of the pharynx would increase the air space so that in all probability no treatment would be necessary, but that if the child should have trouble in breathing, a catheter might be passed just back of the base of the tongue to relieve this. A recent letter from the mother states that the child has difficulty in breathing only when he becomes excited or cries. He never chokes or gasps for breath, but merely breathes hard at this time. Unless his food is made especially fine, it chokes him.

In the Mayo Clinic we have examined ten adults with lingual thyroids. None of these presented a history of having had pharyngeal obstruction at any time. Fetterolf [18] found recorded in the literature two deaths in infancy from mechanical obstruction of a lingual thyroid which was found at necropsy.

CASE 6.—*Congenital flaccid tongue and palate. History.*—D. J. F., a girl, aged 2 months and 3 weeks, came to the clinic for examination, May 26, 1921. She was a second child, of normal birth. She had been very cyanotic at birth, and a catheter had been passed into the pharynx on account of the dyspnea. It had been necessary to retain the catheter almost continuously in the pharynx for two weeks after birth. The child could not go to sleep unless the catheter was in the throat, and had had a great deal of difficulty in swallowing food from a dropper. She had weighed 8 pounds (3.6 kg.) at birth.

Examination.—The child was markedly emaciated, and dehydrated, weighing 7 pounds and 5 ounces (3.3 kg.), and making a peculiar sucking noise on inspiration, when the tongue was sucked back against the palate. On expiration, the neck and cheeks ballooned up, with an intermittent bubbling noise. The child could take but little food on account of the dyspnea. There was some watery discharge from the nose, and in the nasopharynx a collection of curded milk which had been blown back during expiration. The Wassermann reaction was negative (Figs. 7 and 8).

Treatment.—A catheter was passed into the pharynx just back of the tongue, and the child breathed without difficulty.

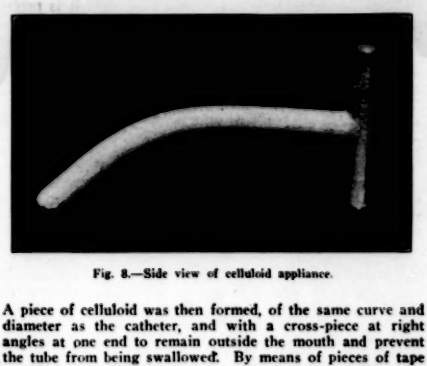


Fig. 8.—Side view of celluloid appliance.

A piece of celluloid was then formed, of the same curve and diameter as the catheter, and with a cross-piece at right angles at one end to remain outside the mouth and prevent the tube from being swallowed. By means of pieces of tape attached through holes at each end of the cross-piece, the celluloid was held in place in the pharynx and replaced the catheter. The child tolerated the apparatus easily, and immediately took her feedings and slept normally, so that she at once began to gain in weight. She gained 2 pounds (0.9 kg.) in a little over two weeks. Figure 7 shows the child after the first two weeks of gaining. She continued to gain and was discharged, June 30, 1921, in good condition, the celluloid

15. Wood, C. A.; Andrews, A. H., and Shambaugh, G. E.: The Practical Medicine Series: The Eye, Ear, Nose and Throat **2**: 1916.
16. New, G. B., and Clark, C. M.: Angiomas of the Larynx: Report of Three Cases, Ann. Otol., Rhinol. & Laryngol. **28**: 1025-1050, 1919.
17. Moore, I.: Further Remarks on Angeiomata of the Larynx, J. Laryngol., Rhinol. & Otol. **38**: 57-65, 1923.
18. Fetterolf, G.: A Case of Lingual Thyroid, Laryngoscope **22**: 1015-1019, 1912.

being removed from time to time to clean it; but she was unable to sleep, or to take her feedings without it. Letters from the mother state that the child gets along now without the celluloid piece. She moves her tongue quite normally, and has no difficulty in eating or breathing.

Butlin [19] describes two types of excessive mobility of the tongue. In the first type the frenum is very long, allowing the tongue to turn back on itself and be swallowed. In the second type there is a sinking back of the tongue, which lies so far back in the mouth that only the tip is visible, the dorsum of the tongue being applied against the posterior pharyngeal wall and the base pressing down against the epiglottis, causing obstruction.

The case I am reporting did not seem to fall into either of these two groups. The obstruction occurred both on inspiration and expiration, and was at the point where the soft palate and the tongue approximated. On inspiration the tongue was sucked back against the palate, and on expiration the palate was forced forward against the tongue, ballooning the neck, and forcing into the nasopharynx some of the food which had been taken. The cause of the obstruction was a flaccidity of the tongue and palate. The etiology of this condition may have been a neurosis.

CONCLUSION

Considering all of these cases as a group, one appreciates the fact that obstruction of the larynx and pharynx in infants may be due to various causes. I have not been able to find cases reported in the literature similar to two of mine; namely, the one in which the true cords were in the middle line (bilateral abductor paralysis) position, and the one of flaccid tongue and palate. This report may, therefore, add two additional types of conditions to those with which we are already familiar, as causing congenital respiratory obstruction.

ABSTRACT OF DISCUSSION

Dr. Thomas B. Carmody, Denver: Many children die within the first few days after birth, and the cause is not discovered. A number of cases of congenital obstruction have been reported in the last year or so. The only one we know of was reported recently by Dr. J. Mackenzie Brown. The grouping in the cases reported by Dr. New being entirely different, will stimulate us still more. A year and a half ago, I saw a child, between 2 and 3 years old, that had symptoms of flaccid epiglottis, like the case reported by Dr. Iglauer, but removal of the epiglottis was not required. Simply turning the child on its side was sufficient. The child also had pneumonia, and we felt that any operative procedure was out of place at the time. However, the child died within ten or twelve hours after we saw it, and necropsy was refused. In another case, there was nothing to do but to open the trachea. The child died a few days afterward, and the diagnosis was some heart condition. Postmortem examination was refused. I have seen one case of flaccid tongue which might possibly have caused obstruction, but it was a cleft palate case, and the cleft palate probably saved the obstruction. We more frequently find a short frenum than a long one in a case of cleft palate.

Dr. Samuel Iglauer, Cincinnati: Dr. New is to be congratulated on the great variety of conditions he found to cause obstruction of breathing. Ordinarily, when we see a case of this kind, the first thing we think of is an enlarged thymus, and probably the second is congenital stridor. However, Dr. New has two or three additional causes that are unique. At the Cincinnati Hospital, Dr. Blackfan has taken roentgenograms of many children, and he has found that many have an enlarged thymus without any resulting obstruction. However, whenever a child has obstruction, the first thing to do is to give a series of roentgen-ray treatments. If the symptoms do not disappear as the result of roentgen-ray treatment, then the thymus is not the cause of the obstruction. I am particularly interested in cases of congenital stridor with incurving epiglottis during inspiration. In the case I reported a year or more ago, there was much more incurving than is shown in the plates Dr. New presented. In that case, the epiglottis not only incurved, but curved backward, and it was so long that it practically closed off the aperture of the larynx. The removal of the epiglottis did not immediately relieve all of the dyspnea, but it disappeared in the course of a week. It seems to me that, perhaps, in congenital stridor there is some other causal element besides the elongated epiglottis. Since reporting that case, Dr. Rooker of Niagara Falls reported a similar case which he relieved by operation, and I believe a case was reported in Los Angeles. However, Dr. New succeeded in curing most of his patients without surgical intervention, and that is a rather remarkable achievement, because I think that we all have a tendency to rush in and do something to relieve the condition rather than to wait and see what Nature will do.

Dr. Gordon B. New, Rochester, Minn.: I want to bring out the point that Dr. Iglauer made, that many cases of so-called status lymphaticus will turn out to be cases of true laryngeal or pharyngeal obstruction.

19. Butlin, H. T., and Spencer, W. G.: Diseases of the Tongue, London and Paris, Cassell & Co., 1900.

PERCIVAL'S CODE: A CHAPTER IN THE HISTORICAL DEVELOPMENT OF MEDICAL ETHICS *

CHAUNCEY D. LEAKE, Ph.D.
MADISON, WIS.

Praesans imperfectum — perfectum, plusquam perfectum futurum.—Grotius.

In tracing the historical development of medical ethics, two main paths of progression are to be noted: The first is concerned with regulations imposed on physicians by outside, and usually civil, authority; and the second with regulations imposed on physicians by physicians themselves. Covering generally the question of fees, and designed to protect at once the interests both of society and of the individual practitioner, the first line of development began with the medical provisions of the celebrated Babylonian Code of Hammurabi (about 2250 B. C.),[1] and culminated with the lengthy fee statutes enacted by the various European municipal authorities [2] and the American colonial assemblies [3] during the seventeenth and first half of the eighteenth centuries. These embodied the principle of the *lex talionis* as late as the medical portions of the Forum Judicium of the Visigoths (about 650 A. D.),[4] and usually prescribed the qualifications necessary for medical practice (e. g., the medical ordinances of Frederick II in 1224 A. D.),[5] and the Menu Code of the Hindus, of unknown date.[6]

It is unlikely that any of these regulations were initiated by physicians, being more probably laws

* Revised from papers read before the Wisconsin Medical History Seminar during the year 1922.

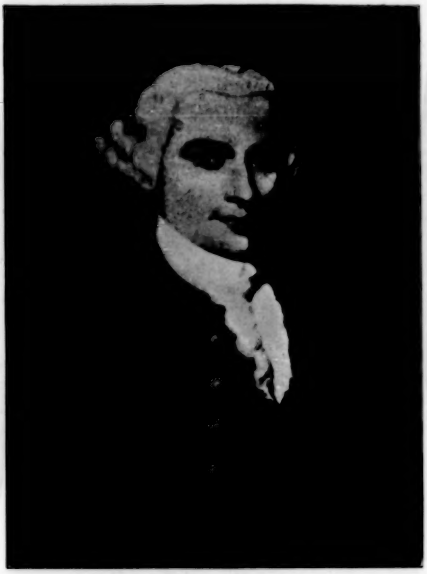
* Owing to lack of space, the code is omitted from The Journal. It will be incorporated in the author's reprints.

1. Harper, R. F.: The Code of Hammurabi, Chicago, 1904.
2. Baas, J. H.: Outlines of the History of Medicine, translated by H. E. Handerson, New York, 1889.
3. Toner, J. M.: Contributions to the Annals of Medical Progress in the United States Before and During the War of Independence, Washington, D. C., 1874.
4. Fort, G. F.: History of Medical Economy During the Middle Ages, New York, 1883.
5. Fort (Footnote 4). Baumer, A.: Die Arztegesetzgebung Kaiser Friedrichs II, Leipzig, 1911.
6. Wise, T. A.: Commentary on the Hindu System of Medicine, Calcutta, 1845.

formulated to correct extortion and abuses practiced by physicians. The more truly ethical aspect of medicine was established by the Greeks during the period of Athenian ascendency. It is worthy to note that these people found it unnecessary, as far as we know, to make any laws regulating the practice of medicine, for this was done for them by their own physicians themselves in the famous Oath and Law of Hippocrates. These formed the ethical standard of the medical profession until the publication of Percival's code in 1803,[7] sufficient testimony to their undying merit.

From the period of Percival's code to the present, most laws relating to medical practice have been instigated by responsible physicians, and all standards of professional morality have been based on his work. It may be said that about the end of the eighteenth century physicians as a whole, apart from the outstanding leaders of former times whose personal professional ethics were unimpeachable, began to justify the trust humanity had for so long placed in them.

After the lapse of more than a century, and with many events tending to focus attention to medical ethics, it may be of interest to examine briefly the character of Thomas Percival, M.D., and his most important contribution.



Thomas Percival

SKETCH OF PERCIVAL'S LIFE

Born Sept. 29, 1740, in Warrington, Lancashire, Thomas Percival was left an orphan when 3 years old, and was raised by an elder sister. When he was at the impressionable age of 10, his uncle, Thomas, a physician, died and bequeathed him a valuable library and a legacy, gifts which persuaded him to study medicine. Always a progressive and independent thinker, he was a dissenter and staunch Unitarian, and at 17 enrolled as the first student in the Warrington Academy, a school for dissenters. His theological beliefs forced him to matriculate at Edinburgh, where in 1761 he began the active study of medicine. Here he became associated with many of the future leaders in medicine, not only of England, but also of the American colonies. He was a personal friend of Hume, and in 1765, the year following his visit to London, he was elected a Fellow of the Royal Society because of his "mathematical and philosophical learning." This was a considerable honor for one so young. It is not apparent why he failed to receive his degree at Edinburgh, but in 1765 he went for a year to Leyden, and obtained it there. Returning to practice at Warrington, Percival married Elizabeth Bassuett, and in 1767 the couple moved to Manchester. Here Percival soon established himself as a leader in medical and intellectual circles. His first publications, "Essays, Medical and Experimental," in 1767 and 1773 attracted favorable attention, and in 1778 he was appointed physician to the famous Manchester Infirmary. Because of poor vision and liability to headaches, he resigned this responsible position in 1780, and was at once appointed physician extraordinary, a position which he held until his death. It was through his interest in this institution that his Code of Medical Ethics was formulated.

Percival's contributions to medicine, aside from professional ethics, were of a stimulating nature. In 1770 he made "Proposals for the Establishment of More Accurate and Comprehensive Bills of Mortality in Manchester," arguing for the preparation of tables of christenings, marriages and burials in all churches, to be reported annually to one central office. These tables were to give the ages and sexes, the dates, and certificates of deaths stating the disease, and were to be signed by reputable attendants. From these statistics Percival expected to ascertain the increase or decrease of particular diseases; the influence of trades, sex, and other factors on longevity; and the influence of seasons and climate on health. With other friends, he actually succeeded in making a statistical examination of the population of Manchester in 1773, the returns of which he communicated to the Royal Society with criticisms and warnings of the errors of his method.

In 1796, Percival became interested in sanitary housing and working conditions, and his influence was considerable in compelling isolation of fever cases and in supervision of the cleanliness of lodging-houses. He apparently was among the first to call attention to the growing evils of factory work, pointing out the insanitary condition of the Manchester cotton mills, and protesting vigorously against the evils of child labor. Brockbank[8] quotes Alfred's "History of the Factory Movement" as stating that "the question of the factory regulation in Manchester, and the conditions under which factory regulation by Act of Parliament was rendered necessary were, in the resolutions of Dr. Percival, clearly laid down."

In medical treatment, Percival's main contribution was an effort to introduce cod liver oil in debilitation, in undernourishment and in chronic rheumatism and sciatica.

7. Percival, Thomas: Medical Ethics, Manchester, 1803.

8. Brockbank, E. M.: The Honorary Medical Staff of the Manchester Infirmary, 1752-1830, Manchester, 1904.

To Percival in a large degree Manchester owes the foundation of the Manchester Literary and Philosophical Society, that distinguished body which sheltered and aided Joule and Dalton. This society was formally organized in 1781, but, according to Brockbank,[8] "for some years before this time, meetings for 'conversation' on scientific and philosophical subjects used to be held weekly in Percival's house." Percival was president of the organization from 1789 to his death, and contributed nine of the first fifty-five papers.

Percival died, Aug. 30, 1804, and was buried at Warrington. He was survived by several children, one of whom, Edward, a physician, collected and published his works in 1807, in four volumes. The title of this edition is interesting in showing the international esteem in which Percival was held: "The works, Literary, Moral, and Medical, of Thomas Percival, M.D., F.R.S., and A.S., F.R.S. and R.M.S. (Edin.), the late President of the Literary and Philosophical Society at Manchester, member of the Medical Societies of London and of Aix en Provence, of the American Academy of Arts, etc., and of the American Philosophical Society at Philadelphia, to which are prefixed memoirs of his life and writings and a selection from his literary correspondence."

The Manchester Infirmary, showing the north wing, added, 1792-1793.

From contemporary accounts, Percival was well regarded by the cultured and enlightened of his age, as pointed out by De Quincy in his Autobiography; although, as quoted by Brockbank,[8] De Quincy intimates that his mother, because of her bigoted tendencies, did not like the more tolerant doctor. However, even in that age of exaggerated and quaint eulogy, nothing could surpass the expression of the Rev. William Magee, later Archbishop of Dublin, on the occasion of Percival's death: "He was an Author without vanity, a Philosopher without pride, a Scholar without pedantry, a Student without seclusion, a Moralist without moroseness, a Patriot without faction, and a Christian without guile. The great object of his life was usefulness, and the grand spring of all his actions was Religion."

PERCIVAL'S "MEDICAL ETHICS"

As early as 1775, Percival began writing short moral essays, entitled "A Father's Advice," and "Moral Tales, Tables and Reflections." These were probably designed at first for his own children, but became so popular that they even became translated into French and German. It was natural enough that with this solicitous regard for the ethical standards of those close about him, Percival's attention should be attracted to conditions in his own profession. The marked discrepancy between the professed ideals of the leaders of medicine and the actual conduct of many in the profession has been a matter for satirical comment for ages, and nearly every organized body of physicians from the Greeks on has attempted to formulate and enact at least a passable minimum of personal conduct compatible with ethical ideals. It was Percival's achievement to devise such a code of professional morality that it was susceptible to authoritative enforcement, and therefore of widespread emulation. Previous attempts, such as that of Paracelsus,[9] lacked authority because of their vague generalizations and failure to receive respect; or, as in the case of some of the continental organizations,[10] the rules were too strict and bigoted.

That Percival very soon after beginning practice had formulated ideas regarding professional ethics is shown by a letter written in 1771 in which he outlined a system for the "Internal Regulation of Hospitals." As the preface to the first edition of the "Medical Ethics" indicates, he composed in 1792, at the request of the physicians of the infirmary, "A Scheme of Professional Conduct Relative to Hospitals and Other Medical Charities." This became the code of laws under which the infirmary operated. In 1794, this code was printed for private circulation, in order to gather the criticisms of friends. Percival wished to call his work "Medical Jurisprudence," but was persuaded that "Medical Ethics" was a more suitable title. In the copy of the 1794 edition owned by the Manchester Infirmary is a note in Percival's writing, according to Brockbank,[8] "The completion of the 'Medical Jurisprudence' has been long suspended, and it is uncertain when the undertaking will be resumed. A title page, an introduction, a fifth and sixth section, and an appendix containing notes and illustrations are wanting to finish this little work. Manchester, March 17, 1794." The fifth section, "On the Powers, Privileges, Honours, and Emoluments of the Faculty," and the sixth, "On the Moral, Religious, and Political Character of Physicians," were never completed.

With the corrections made by friendly criticism, and with the endorsement of a long list of prominent English physicians, among whom was Erasmus Darwin, William Heberden and William Withering, the work was published at Manchester in 1803.

Percival's "Medical Ethics" is a charmingly written book, expressed quite in that leisurely, quaint and scholarly style one associates with a true English gentleman of the old school. Meeting at once with marked success, its wide distribution among all practitioners and medical students was urged by influential physicians. This was done, and it became the standard code of professional morality enjoined upon all practitioners in the British Empire.

Two other editions were published after Percival's death. The first, in 1827, was edited anonymously, and is interesting because of the editorial notes exposing

9. Stoddart, A. M.: The Life of Paracelsus, London, 1911.
10. Examples may be found in Baas (Footnote 2).

the medical evils of the time. Attacks are made on the "diploma mongering" Colleges of Physicians of London and Dublin, and on the unworthy character of contemporary physicians. The last edition was issued in 1849 under the editorial supervision of Dr. Greenhill of Oxford. Since then other writers, such as Dr. Robert Saundby,[11] have issued texts on medical ethics, none of which either acknowledge any indebtedness to Percival, or show any evidence of improvement on him.

As intimated by the preface, Percival wrote his "Medical Ethics" for the guidance of the elder of two of his sons training for medical practice. The untimely death of this son, and of Percival's wife, caused the delay in its completion. It was dedicated to the other son, Edward Cropper, and although expressed in a manner suggesting that Percival intended it more as a justification for the reputation of a dutiful and affectionate father than as a simple note of dedication to a well beloved and thoroughly understood son, the dedication is worth quoting as an example of the author's literary style and moral tone:

To E. C. PERCIVAL. Permit me, my dear son, to offer to your acceptance this little Manual of Medical Ethics. In the composition of it, my thoughts were directed towards your late excellent Brother, with the tenderest impulse of paternal love: And not a single moral rule was framed without a secret view to his designation; and an anxious wish that it might influence his future conduct.

To you, who possess, in no inferior degree, my esteem and attachment; who are prosecuting the same studies, and with the same objects; my solicitudes are naturally transferred. And I am persuaded, these united considerations will powerfully and permanently operate upon your ingenius mind.

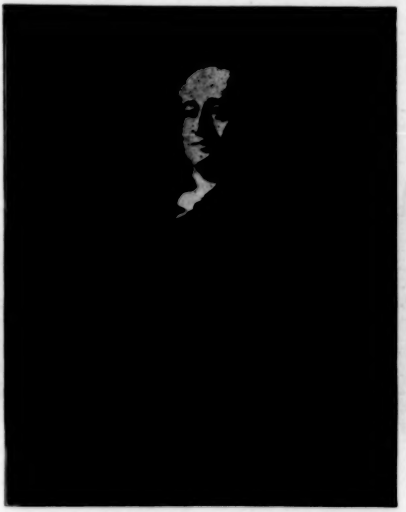
It is the characteristic of a wise man to act on determinate principles; and of a good man to be assured that they are conformable to rectitude and virtue. The relations in which a physician stands to his patients, to his brethren, and to the public, are complicated and miltifarious; involving much knowledge of human nature, and extensive moral duties. The study of professional Ethics, therefore, cannot fail to invigorate and enlarge your understanding; whilst the observance of the duties which they enjoin, will soften your manners, expand your affections, and form you to that propriety and dignity of conduct, which are essential to the character of a Gentleman. The academical advantages you have enjoyed at Cambridge, and those you now possess in Edinburgh, will qualify you, I trust, for an ample and honourable sphere of action. And I devoutly pray, that the blessing of God may attend all your pursuits; rendering them at once subservient to your own felicity, and the good of your fellow-creatures.

Sensible that I begin to experience the pressure of advancing years, I regard the present publication as the conclusion, in this way, of my professional labours. I may, therefore, without impropriety, claim the privilege of consecrating them to you, as a paternal legacy. And I feel cordial satisfaction in the occasion of thus testifying the esteem and tenderness with which, whilst life subsists, I shall remain,

Your affectionate friend,
THOMAS PERCIVAL.

The work includes a preface and four chapters: the first, "Of Professional Conduct Relative to Hospital or Other Medical Charities"; the second, "Of professional Conduct in Private, or General Practice"; the third, "Of the Conduct of Physicians to Apothecaries"; and fourth, "Of Professional Duties in Certain Cases which Require a Knowledge of Law." To these are appended a discourse on hospital duties, and some twenty-two notes and illustrations concerned with hospital management, caution in practice, temperance of physicians, education, worship, and other pertinent matters. In these notes Percival adopts more of a real literary style, and many of them form delightful and scholarly essays.

The influence of this contribution in the field of medical deontology cannot be overemphasized. It served to arouse all physicians to a sense of their moral obligations, and stimulated great discussion in the profession on the points involved. It was but natural that much opposition should arise against the code as formulated by Percival, but its prompt acceptance by the regular associations and leaders of medicine caused those who acted in disagreement with its tenets to feel outlawed. Along with this weak opposition, imitation of the code by various organizations of physicians followed at once. These had a compelling power at hand in regard to obeying the code, in that disobedience, after proper trial, resulted in expulsion.



Samuel Brown, M.D., 1769-1830.

INFLUENCE OF PERCIVAL'S ETHICS ON THE MEDICAL PROFESSION OF THE UNITED STATES

Students of ethics generally recognize two broad theories of moral conduct, essentially contradictory in character: the first, having an ideal end, and serving the interests of humanity in general, is usually designated idealism, or rationalism, and is largely Platonic in nature; the second, having a more practical end, and serving the interests of self, is called hedonism, since it implies personal pleasure as the aim of all conduct. From an analysis of the evolution of moral actions, John Stuart Mill, whose altruistic delicacy was shocked by the coarse implications of hedonism, formulated the principle that whatever is useful is good. This is utilitarianism, and, as Robertson[12] points out, "The whole scope of medicine in relation to the public health is based on this aspect of ethics."

11. Saundby, Robert: Medical Ethics, London, 1907.

12. Robertson, W. G. A.: Medical Conduct and Practice: A Guide to the Ethics of Medicine, London, 1921.

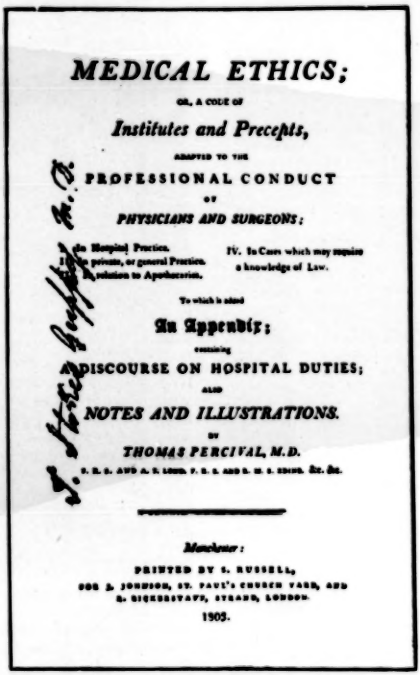
In a measure, this is unfortunate, for, as Warner Fite [13] indicates, utilitarianism is an ineffectual compromise between idealism and hedonism, working out in actual practice along purely hedonistic lines. This is clear enough in the moral aspects of medicine, in which, to many physicians, utilitarianism becomes a placebo to their idealistic consciences and a cloak for their hedonistic conduct.

Nevertheless, when one reviews the principles underlying the moral responsibilities of medical men, as enunciated by physicians themselves, and relates them to the evolution of philosophy and civilization, one feels that medical ethics is not based on utilitarianism, but on idealism. From the Hippocratic Oath to the latest revision of the Principles of Ethics of the American Medical Association, it is implied by all the medico-ethical writers that the ideal ends in the interest of humanity are the real bases for their remarks, and that these must be compromised only as little as possible in the interests of self. Of this righteous spirit, more evident, of course, in less formal statements of physicians, of which the essays of Osler [14] and Weir Mitchell [15] furnish striking illustrations—of this righteous spirit physicians may be proud. It has won against the pressure of two powerful forces: one, the overwhelming heritage, as James Harvey Robinson [16] puts it, of an animal, child and savage mind, and the other arising from the dangers of the superlatively objective scientific attitude.

Percival's code is idealistic in general, but recognition is made to the hedonistic factor in medical practice due to economic pressure on the individual physician. It is interesting to note how this factor becomes amplified in subsequent revisions of Percival's code made in the United States, where economic pressure was more severe.

The influence of Percival's code in the United States was very great, since it served as a model for all the ethical principles adopted by the various medical organzations of the country, including those of the American Medical Association itself. Previous to the date of Percival's publication, several state medical societies, such as those of New Jersey [17] and Massachusetts, had incorporated in their constitutions or articles of organization many commendable ethical principles, and Benjamin Rush had published a lecture on the duties of a physician.[18] But rather than establishing an authoritative system of medical ethics such as Percival's, these indicated the need for it.

This necessity became acute during the eighteen-twenties, when the rapid expansion of the nation and the rise of many ill equipped medical schools attracted many unscrupulous persons to a lucrative profession. Dr. Samuel Brown of Transylvania University, Lexington, Ky., felt that he had a solution to offer in the formation of a secret society of the best physicians in the country, in which mutual support and good feeling were to reign, and in which the members were to be bound by a rigid system of ethical rules.[19] This code of the Kappa Lambda Society of Aesculapius was probably devised and in operation by 1820. In 1823 it was published by the Philadelphia Chapter of Kappa Lambda, and was acknowledged to be an abridgment of Percival's Ethics.



MEDICAL ETHICS;

OR, A CODE OF

Institutes and Precepts,

ADAPTED TO THE

PROFESSIONAL CONDUCT

OF

PHYSICIANS AND SURGEONS:

Hospital Practice.
private, or general Practice.
relation to Apothecaries.

IV. In Cases which may require a knowledge of Law.

To which is added

An Appendix;

containing

A DISCOURSE ON HOSPITAL DUTIES;

ALSO

NOTES AND ILLUSTRATIONS.

BY

THOMAS PERCIVAL, M.D.

F. R. S. AND A. S. LOND. F. R. S. AND R. M. S. EDINB. &c. &c.

Manchester:

PRINTED BY S. RUSSELL,

FOR J. JOHNSON, ST. PAUL'S CHURCH YARD, AND R. DICKINSON, STRAND, LONDON.

1803.

Title page of the code.

In the same year, the New York State Medical Society, undoubtedly activated by the same spirit, adapted the report and code of ethics drawn by a committee composed of James R. Manley, Felix Pascalis and John H. Steele.[20] These men made no acknowledgment to Percival; nor did Dr. J. J. Walsh,[21] in commenting on their labors, refer to their manifest indebtedness to the Englishman. On the contrary, Dr. Walsh made it seem as though the idea of a code of medical ethics originated with these members of the New York State Medical Society, and that no one else had ever thought of such a thing before. While the arrangement is different, and the material more condensed in the case of the New York code, the aphoristic style is the same, the context is very sim-

13. Fite, Warner: An Introductory Study of Ethics, New York, 1916.
14. Osler, William: Aequanimitas, with Other Addresses to Medical Students, Nurses and Practitioners of Medicine, Ed. 2, London, 1920.
15. Mitchell, S. W.: Doctor and Patient, Philadelphia, 1904.
16. Robinson, J. H.: The Mind in the Making: The Relation of Intelligence to Social Reform, New York, 1921.
17. The Rise, Minutes, and Proceedings of the New Jersey Medical Society, Established July 23rd, 1766, Published by order of the Society, Newark, 1875.
18. Rush, Benjamin: Medical Inquiries and Observations, Volume I, Appendix "Containing Observations on the Duties of a Physician, and the Methods of Improving Medicine Accomodated to the Present State of Society and Manners in the United States," Philadelphia, 1794.
19. Leake, C. D.: What Was Kappa Lambda? Annals of Medical History, Summer 1922, 4, No. 2, p. 192.
20. Transactions of the Medical Society of the State of New York from Its Organization in 1807, up to and Including 1831, Albany, 1868, p. 230.
21. Walsh, J. J.: History of the Medical Society of the State of New York in Commemoration of the Centennial of the . . . Society, New York, 1907.

ilar, and in several places foot-notes in the New York code refer specifically to Percival's words.

In 1832, the Medico-Chirurgical Society of Baltimore published "A System of Medical Ethics," [22] prefaced by this note:

> In the composition of this code of Ethics, free use has been made of Percival's Ethics, the abridgment of the same by the K. L. Society of Philadelphia, Gregory's Lectures on the Duties and Qualifications of a Physician, the Code of Ethics drawn up by the New York State Medical Society, that of the Connecticut Medical Society, Rush's Medical Observations and Inquiries and Lectures, and Ryan's Medical Jurisprudence by Griffith.—This general acknowledgement will render special references unnecessary.

The paramount importance of Percival's Ethics is here clearly enough stated.

Largely through the efforts of Nathan Smith Davis, the American Medical Association, in spite of much opposition, was organized in May 1846, in New York City. The first real business of the national medical organization was transacted the following year in Philadelphia, and it covered two of the matters most interesting in a study of medical ethics, the requirements of a medical education, and the formulation of a code of professional ethics.[23] Dr. J. J. Walsh has attempted to prove that this national code of medical ethics was based directly on the code of the New York State Medical Society. He [21] says:

> The reading of the two codes makes it clear that that of the National Association was founded to a considerable extent on the system of ethics of the New York State Society. This is not surprising if we recall that the American Medical Association originated from the efforts of the State Society of New York. While there has come considerable development in the professional aspect of many duties of physicians in the early quarter of a century that separates the two documents, there is no doubt at all about the influence exerted by the original system of ethics, and no ethical document adopted by any other state society had anything like the same influence. This is, of course, all the more interesting in the light of the fact that when the further development of medical ethics was to come after another fifty years, New York was again to be a leader in the evolution.

The note prefaced to the edition of the national code published in Philadelphia in 1848 [24] indicates that Dr. Walsh's contentions are not true:

> Dr. Hays, in reporting the following code of medical ethics to the National Medical Convention, stated that justice required some explanatory remarks should accompany it.
>
> The members of the convention, he observed, would not fail to recognize in parts of it expressions with which they were familiar. On examining a great number of codes of ethics adopted by different societies in the United States, it was found that they were all based on that by Dr. Percival, and that the phrases of this writer were preserved, to a considerable extent, in all of them. Believing that language so often examined and adopted must possess the greatest of merits for such a document as the present, clearness and precision, and having no ambition for the honors of authorship, the committee which prepared this code have followed a similar course, and have carefully preserved the words of Percival wherever they convey the precepts it is wished to inoculate. A few of the sections are in the words of the late Dr. Rush, and one or two sentences are from other writers. But in all cases, wherever it was thought that the language could be made more explicit by changing a word, or even a part of a sentence, this has been unhesitatingly done; and thus there are but few sections which have not undergone some modification; while, for the language of many, and for the arrangement of the whole, the committee must be held exclusively responsible."

Credit is here given in no uncertain terms to Percival; and to the gracelessness of the previous lack of acknowledgment, attention is rather neatly called.

Gregory's "Lectures on the Duties and Qualifications of a Physician" exerted considerable influence on the development of American medical ethics, probably because many of the older leaders had heard them delivered at Edinburgh. But their lack of concrete definiteness put them in the advisory group with Rush's lectures on the same subject rather than in the authoritative position occupied by Percival's code.

Percival's direct influence on medicine culminated with the announcement by Dr. Hays before the American Medical Association, but it is not too much to believe that his enlightened attitude with regard to public medicine, and his ideals for the guidance of the individual practitioner, are still strong in maintaining the honorable character of the moral aspects of modern medicine, especially in connection with the agitation for more general practice. Percival wrote primarily for the general practitioner, and from the standpoint of one

22. A System of Medical Ethics Adopted by the Medico-Chirurgical Society of Baltimore, Baltimore, 1832.
23. Davis, N. S.: History of the American Medical Association, Philadelphia, 1855.
24. Code of Ethics of the American Medical Association, Adopted May, 1847, Philadelphia, 1848.

BACTERIAL ENDOCARDITIS IN CONGENTIAL HEART DISEASE *

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The occurrence of bacterial endocarditis in association with a congenital cardiac defect is of interest because it is uncommon, because it presents certain diagnostic difficulties, and because of its bearing on the origin of bacterial infection of the endocardium. Its rarity is probably due to the infrequency of congenital heart disease after the first few years of life. According to Libman,[1] bacterial endocarditis usually attacks damaged valves or altered endocardial surfaces. Sufferers from congenital cardiac defects are, therefore, probably more prone to develop bacterial endocarditis than are normal persons. In children in whom both congenital and acquired cardiac affections are frequent, it is surprising, as Cautley [2] has pointed out, that bacterial endocarditis is not more common than it is.

Among the 150 cases of bacterial endocarditis included in Horder's [3] series, there were eight cases in which the heart showed congenital lesions. Allbutt [4] has reported sixty-four cases of endocarditis (right-sided), of which twenty-one were associated with congenital cardiac defects. Tuley and Moore [5] have reported a case of pneumococcus endocarditis in a boy, aged 13, with congenital heart disease. This patient also showed numerous other developmental abnormalities, such as congenital ptosis of the eyelids, bifid uvula and typical hutchinsonian teeth. Another case of congenital heart disease associated with pneumococcus endocarditis is that of Augé and Nobécourt [6] in a

* From the Department of Internal Medicine, University of Michigan Medical School.

1. Libman, Emanuel: Am. J. M. Sc. **140**: 516-527, 1910.
2. Cautley, E.: Arch. Pediat. **30**: 328-334, 1913.
3. Horder, T. J.: Quart. J. Med. **2**: 289-324, 1908.
4. Allbutt and Rolleston: System of Medicine, Ed. 2, **6**: 311, 1909.
5. Tuley, H. E., and Moore, J. W.: Report of a Case of Congenital Endocarditis, Am. J. Dis. Child. **12**: 426 (May) 1917.
6. Augé and Nobécourt: Bull. et mém. Soc. méd. d. hôp. de Paris **40**: 40-43, 1916.

patient, aged 22. In Abbott's [7] series of 631 cases of congenital heart disease of all types, 182, or about 29 per cent., presented associated endocarditis. Of these patients, approximately 12 per cent. had acute, and 17 per cent. had chronic endocarditis. Garrod [8] has reported an unusual case in a patient, aged 39, with ulcerating vegetations engrafted on congenitally deformed aortic valves. This patient had also a congenital malformation of the liver. In a case reported by Moschcowitz,[9] the vegetations were on and about the pulmonary valve, the heart having an interventricular septum defect. In this case, *Streptococcus viridans* was recovered from the blood stream in one of seven blood cultures. An interesting finding in Hebb's [10] case was evidence of an old, as well as a recent, endocarditis. Laffitte [11] has recorded a case of acute endocarditis in a patient, aged 21, with congenital heart disease, who always had slight dyspnea on exertion, but no cyanosis. In Gordon's [12] patient, a boy, aged 5, there was an interventricular septum defect; Gordon refers to similar cases reported by Turner, Hector MacKenzie and Jackson Clarke.

Horder [3] attributes the predisposition to bacterial endocarditis in congenital heart disease to chronic thickening of the endocardium, which is frequently found with these defects. It has been pointed out that the readjusted and changed blood stream in congenital heart disease throws on various parts of the heart strains for which they are not adapted. These unusual strains produce areas of lowered resistance on which bacterial infections are engrafted. Vegetations are common about the borders of septal defects, and also opposite defects in the ventricular septum, on that part of the ventricular wall against which the abnormal blood stream is directed.

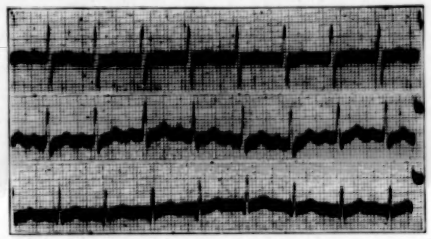

Fig. 1.—Type of electrocardiogram not commonly seen in pulmonary stenosis. It suggested right ventricular preponderance.

In some of the reports, the ages of individual patients are not given; most of the cases apparently fall in the first and second decades. I have not been able to find any record of the association of postfetal bacterial endocarditis and congenital heart disease before the age of 2½ years [3] or after the age of 39.[8]

The case reported here presents a most interesting and instructive example of the picture produced by the engrafting of a subacute bacterial endocarditis on a congenital heart lesion, and of the difficulties in diagnosis to which it gives rise.

REPORT OF CASE

History.—F. H., a man, aged 25, admitted to the University Hospital, Feb. 27, 1923, complaining of bloating of the abdomen, swelling of the feet and scrotum, weakness and sore mouth, had been able to continue his work as a railroad fireman, without symptoms, until October, 1922, when the illness of which he complained began. Before this illness he had never been breathless, and although he had always felt some slight palpitation, he had never been really incapacitated by the heart lesion of which he had been aware for many years. His "peculiar heart" had been noted by several different physicians, and was said to have been present at birth.

One of the patient's brothers was a "blue baby," and died forty-eight hours after birth of congenital heart disease. A second brother, who was living, had been told that he had a "weak heart," a condition which was present at birth. The father and mother were living and in good health.

The patient had measles in infancy, also mumps, followed by orchitis. He had inflammatory rheumatism at the age of 18, with characteristic involvement of the joints. He had gonorrhea at the age of 19, but denied knowledge of any primary or secondary syphilitic lesions. His average weight had been about 170 pounds (77 kg.); at the time of admission, he weighed 135 pounds (61 kg.).

In October, 1922, five months previous to his admission, he noticed a crop of "cold sores" on his lips, and a few days later, he had a severe chill. The day following the chill, he felt well, and resumed his work, but in the evening he felt chilly and very tired. This chilliness and fatigue continued for five weeks. In the morning he felt quite well, but each evening his symptoms returned. He felt feverish, and a physician who was called confirmed the presence of fever. After five weeks, the weakness and the increased severity of his other symptoms confined him to bed, where he remained three weeks. During this period, he had daily exacerbations of fever, with a maximal temperature of from 103 to 104, and a minimal temperature of about 101. His condition at this time resembled that seen in typhoid fever with delirium, and was so diagnosed. When he had recovered sufficiently to be up and about, his morning temperature was normal, but every afternoon at about the same time, his temperature rose suddenly to about 104, and he had a severe shaking chill. His condition then led to a tentative diagnosis of malaria. After a short time, the fever and chills became less severe, but the weakness increased. Three weeks previous to his admission to the hospital, he first noted that the legs and scrotum were swollen. The swelling involved the entire body at one time, but subsided except in the parts mentioned. During the week preceding admission, the abdomen became swollen and the tongue very sore.

Examination.—The examination at the time of admission showed signs of a considerable loss of weight. His mental state was normal, though he appeared acutely ill. The skin of the face was pale, with a lemon yellow tint. The eyes and ears were normal; there was a high grade nasal obstruction which made mouth breathing necessary. The lips were pale, but showed no cyanosis; the tongue was pale, smoothed out and atrophic in appearance. There was slight pulsation in the right supraclavicular fossa.

The chest was symmetrical; it expanded equally on the two sides, and respiration was normal. The cardiac impulse was not sharply localized, but there was a conspicuous systolic heaving of the entire precordium, and a systolic pulsation in the third intercostal space to the left of the sternum, with a diastolic retraction in the same area. By percussion, the left border of the heart was located in the midaxillary line, while the right border was 5 cm. to the right of the midsternal line. Palpation revealed a very strong thrill over the entire precordium; it was best felt in the second, third and fourth interspaces just to the left of the sternum. It was not felt at the apex, nor was it transmitted to the vessels of the neck. It extended upward and outward toward the left shoulder, but was not felt to the right of the sternum. On auscultation, a very loud harsh, rasping systolic murmur was heard over

7. Abbott, M., in Osler and McCrae: Modern Medicine, New York, Lea & Febiger, 1915, pp. 323-448.
8. Garrod, A. E.: Tr. Path. Soc. London **48**: 42, 1897.
9. Moschcowitz, E.: Proc. New York Path. Soc. **14**: 18, 1914.
10. Hebb, R. G.: Tr. Path. Soc. London **48**: 41, 1897.
11. Laffitte: Bull. Soc. anat. de Paris **6**: 13, 1892.
12. Gordon, W.: Brit. M. J. **2**: 1174, 1897.

the entire precordium. It was loudest over the region where the thrill was best felt, and was transmitted in a similar way, though more widely. It was plainly heard in the back. No diastolic murmur was heard. The heart rhythm was regular. The pulse was large and poorly sustained, and had some of the features characteristic of the Corrigan pulse of aortic insufficiency. There was conspicuous pulsation of the arteries of the neck, and a well defined capillary pulse. When the patient's fingers were grasped in the hand, the throbbing of the vessels could be easily felt.

The examination of the abdomen showed extreme tenderness under the left costal border, and a large collection of ascitic fluid which prevented accurate palpation of the abdominal viscera. The scrotum was very edematous. The fingers showed slight clubbing. There was conspicuous edema of both legs. The skin of the entire body was dry, slightly inelastic, pale and slightly yellowish. A close search of the skin and mucous membranes failed to reveal any petechiae. The urine was cloudy; specific gravity, 1.010. It contained a moderate amount of albumin; the sediment showed 200 white and 200 red blood corpuscles per low-power field. The blood examination showed hemoglobin, 20 per cent. (Sahli); red blood corpuscles, 1,700,000 per cubic millimeter, and white blood corpuscles, 21,400 per cubic millimeter, of which 86 per cent. were polymorphonuclears. One week later, the urine was smoky; it contained more albumin and the sediment contained many cellular casts in addition to large numbers of red and white blood cells. Ten days after admission, the phenolsulphonephthalein excretion was found to be 25 per cent. in the first hour, and 10 per cent. in the second hour. The blood contained 38.3 mg. of nonprotein nitrogen per hundred cubic centimeters, and the carbon dioxid combining power of the plasma measured 26.2 per cent. by volume. Twenty-four hours before death, the urine contained a large amount of blood. The leukocytosis present on admission persisted until death. Two blood cultures taken before death were both negative after seventy-two hours, but a pure culture of *Streptococcus viridans* was obtained after death from vegetations on the aortic and pulmonic valves.

Fig. 2.—Right side of the heart: The grooved director is inserted in the button-like opening between the trabeculae, which was anterior to the septal defect leading in the direction of the pulmonary artery; the large polypoid vegetation is shown on one of the pulmonary cusps.

Fluoroscopic examination of the heart showed an enormous cardiac enlargement. There was distinct pulsation of the pulmonary arch, but this was not dilated as is commonly the case in open ductus arteriosis. The heart shadow was not globular, nor did it show conspicuous systolic pulsation of the right border; it did not, therefore, show the features which are said to occur in many cases of defective ventricular septum.[13]

The electrocardiogram suggested right ventricular preponderance. It was not, however, of the type commonly seen in pulmonary stenosis.

Course.—March 6, the patient first complained of a sore tongue, and inspection showed it to be very much swollen and reddened, undoubtedly an acute glossitis, the infection having entered through one of the fissures.

March 7, the patient's condition was worse; he was much weaker and complained of choking spells. There was a very noticeable swelling and infiltration of the neck tissues, progressing downward.

March 10, the pulse was weak and thready, but the tongue condition was improved. The chest showed impaired resonance over the left lower back. There was no change in the breath or voice sounds in this area. The face was much swollen.

March 11, the patient died having remained fully conscious to the end.

Necropsy.—The skin was pasty white, with only a trace of yellow. It was fine, soft, and moderately elastic. There was considerable edema of the legs and scrotum, and slight edema of the face. The nasal septum showed a perforation 2 cm. in diameter.

The abdominal panniculus was very scanty; the abdominal cavity contained about 1,500 c.c. of a chyliform fluid, which was slightly greenish-yellow. The lower border of the liver was 7 cm. below the tip of the ensiform and at the rib margin in the right nipple line. The spleen appeared larger than normal for the size of the body. A small accessory spleen was present. The gastro-intestinal tract was essentially negative. There was no portal vein obstruction, and the mesenteric lymph nodes showed no hyperplasia. The left kidney weighed 425 gm.; its capsule was pale, and mottled gray and pinkish areas were seen through the capsule. The fibrous capsule stripped readily, leaving a smooth, pale, yellowish-gray surface, on which the stellate veins stood out very prominently. Section of the kidney showed swelling of the entire parenchyma, which was most marked in the cortex. The cortex measured 14 mm. in thickness over the bases of the pyramids. In many areas there was a yellowish fatty appearance, and everywhere the cut surface of the cortex rose well above the level of the medulla. The right kidney weighed 405 gm., and in appearance resembled the left. In the abdominal aorta there were well advanced atherosclerotic areas in the form of elevated yellowish plaques, chiefly linear in distribution.

There was considerable fluid exudate in the substernal tissues. Fluid was present in both pleural cavities. Abundant islands of thymic tissue were easily demonstrated. Over the left lung there was a very acute fibrinous pleuritis, and the lung showed almost complete atelectasis and, on section, some edema and congestion. The right lung showed some atelectasis and also edema and congestion. Examination of the bronchi showed a few patches of purulent bronchitis on both sides. The pulmonary vessels showed no evidence of embolism or thrombosis.

The pericardial tension was increased, and the pericardial sac contained about 200 c.c. of a turbid fluid. The heart measured 13.5 by 12.5 by 9 cm.; its weight was not obtained.

13. Vaquez and Bordet: The Heart and the Aorta, New Haven, Yale University Press, 1920.

The ventricular portion was somewhat rounded and globular in form. The apex was formed jointly by both ventricles and was not bifid.

The right ventricular wall was hypertrophied, averaging 14 mm. in thickness with the heart in rigor. The foramen ovale was closed, but a defect measuring 23 mm. in diameter was present in the membranous portion of the interventricular septum immediately beneath the aortic ring. This situation caused the upper margin of the opening to be formed by the inferior surface of the aortic cusp, on which was a polypoid vegetation 7.5 mm. in diameter. Anterior to the septal defect was a buttonhole-like opening between the trabeculae, which admitted the thumb. This opening led in the direction of the pulmonary artery, the conus arteriosus thus being unusually cut off from the remainder of the right ventricle. The pulmonary ring proper was found 3 cm. above this opening. The pulmonary valves were tricuspid, one valve showing a small fenestration. A large polypoid vegetation, measuring 1.5 by 1 by 0.5 cm., was attached to one of the cusps.

The left ventricular wall measured 22 mm. in thickness while still in rigor. No fibroid areas were found in the myocardium. The aortic valves showed some inequality; the cusps were irregularly thickened and bore a few small vegetations. The aortic orifice was entirely to the left of the septum. The mitral valves showed but one small marginal nodule.

The heart showed serous atrophy of the subepicardial fat, moderate hypertrophy of the heart muscle, and advanced sclerosis of the endocardium with subendocardial fibrosis. No Aschoff bodies were found. Early atherosclerosis was noted in the aorta. The endocardial vegetations showed progressive thrombo-endocarditis with organization and calcification, signs of an active process. Occasional large Hassell corpuscles were found in the persistent thymus. The spleen showed atrophy of lymphoid tissue, but no infarcts. The liver was of the nutmeg type, showing leukocytosis and atrophy of the liver rods. The microscope picture of both kidneys was that of diffuse subacute glomerulotubular nephritis with severe edema and congestion. Leukocytic infiltration and numerous epithelial crescents were present. A few small hemorrhages were found, but no infarcts were discovered. There was complete atrophy of the testicular germ cells, with no spermatids. One testis showed nearly complete fibroid atrophy, with hyperplasia of the interstitial cells, evidence of an old diffuse orchitis due to mumps.

Fig. 3.—Left side of the heart: large defect in membranous portion of septum.

COMMENT

There can be little doubt that the association of endocarditis and congenital heart disease is more than a coincidence. Their rather frequent association, in view of the rarity of the primary condition, lends additional weight to the statement of Libman [13] that endocardial infection in hearts occurs on previously damaged or, in these cases, altered surfaces. Our patient gave a history of rheumatic fever, and although no evidence of rheumatic heart disease was found at necropsy, this may have contributed to his susceptibility to bacterial endocarditis.

Bacterial endocarditis is most protean in nature. It is frequently diagnosed as typhoid fever, meningitis or malaria, resembling at times the last mentioned to such a degree that the opinion was widely held at one time, especially by the French, that malaria might be the cause of the condition.

The predisposition of patients with congenital or acquired cardiac disease to bacterial endocarditis is a stumbling block in the recognition of the disease. The family physician who is first called, knowing that the patient has had heart disease for years, is not likely to associate the fever and signs of infection with the cardiac lesion. For the consultant who learns of the heart lesion and the signs of infection simultaneously and at a later date, the diagnosis is usually not difficult.

It should be emphasized that a fever of irregular type, of which the cause is not obvious, in a patient who has heart disease, should lead to a suspicion of endocardial infection, especially if it is long continued. When to this picture are added a progressive hemolytic anemia and acute nephritis with red blood cells and cellular casts in the urine, the diagnosis becomes practically certain.

The disease is almost always fatal, and any hope of the patient's recovery rests on the early recognition of the disease, which is probably best and earliest made by properly taken and controlled blood cultures. The recent report of Capps [14] on the treatment of this disease with sodium cacydolate leads to the hope that treatment with this drug in early cases may bring about a small percentage of cures.

Cyanosis is very common in congenital heart disease, and extreme grades of this symptom are frequently seen. Thomson [15] found cyanosis in 53 per cent. of 136 cases; Still [15] noted it in thirty-four of 100 cases.

14. Capps: Am. J. M. Sc. **165**: 40-47, 1923.
15. Quoted by Lundsgaard and Van Slyke, Medicine **2**, No. 1, 1923.

There are many theories to explain this association. Morgagni and others believed venous stasis to be the causative factor. The admixture of venous and arterial blood was considered by de Senac, Meckel and other observers to be the cause of the cyanosis. Lees thought many factors, including those mentioned, led to deficient aeration of the blood, which was the essential element in the production of cyanosis.

Normally, the intraventricular systolic pressure is higher in the left than in the right ventricle. When there is a defect in the ventricular septum, the blood flow is, therefore, from left to right. An uncomplicated septal defect is not likely, therefore, to be accompanied by cyanosis due to admixture of venous and arterial blood.

When, however, a large opening in the septum is complicated by pulmonary stenosis, cyanosis is almost always present. It is probable that the stenosis leads to high pressure in the right ventricle, and thus to a flow of blood from the right to the left ventricle. The relation between pulmonary stenosis and high pressure within the right ventricle may be easily explained by the principles laid down by Starling.[16] The absence of cyanosis in patients with large septal defects and pulmonary stenosis has always been difficult to explain.

Recently, Lundsgaard and Van Slyke [17] have shown that cyanosis depends on certain essential factors, and is altered in degree by many variable conditions. Essentially, cyanosis depends on the absolute amount of reduced hemoglobin per unit of blood volume. With other factors remaining normal, it requires 5 gm. of reduced hemoglobin per hundred cubic centimeters of capillary blood to produce the bluish color. The ratio of oxygenated to reduced hemoglobin plays no part. Where a portion of the blood passes through an unaerated shunt, as in cardiac septal defects, one third of the total blood volume must be shunted before the cyanotic threshold is crossed. The absence of cyanosis in certain cases of septal defect and pulmonary stenosis may, therefore, be easily explained.

Anemia is important in the production of cyanosis. Whereas polycythemia, which is often present in congenital heart disease, increases the tendency to cyanosis, anemia reduces the chances of its development. In anemias of severe grade, in which 100 c.c. of blood does not contain 5 gm. of hemoglobin, cyanosis cannot develop under any conditions.

A severe anemia, of recent development, was present in our patient when he was admitted. As the patient had no cyanosis while in good health, its absence could not have been due to the anemia.

The late urinary changes and the pathologic changes in the kidneys are of interest. Hematuria has been frequently noted in subacute bacterial endocarditis, and is often considered a sign of hemorrhagic nephritis. In a special anatomic study of kidneys from patients dying from subacute bacterial endocarditis, Baehr [18] described what he considered a distinctive picture. This consisted of bacterial emboli in the glomerular capillaries with no visible changes in the uninvolved loops of involved or uninvolved glomeruli, the only apparent disturbance being a microscopic renal bleeding. In a later study,[19] these glomerular changes were not found in patients who showed signs of acute renal insufficiency and died of subacute bacterial endocarditis. In nine of his seventy-seven cases, Baehr [20] found unusual kidney changes. In these, the glomerular lesions were obscured by universal glomerulotubular damage. The microscopic kidney changes in two cases closely resembled that found in our patient. The glomerular epithelium was swollen; several glomerular loops were bloodless and disintegrated, while an active proliferation of Bowman's capsule caused crescents of swollen and proliferating cells. No bacterial glomerular emboli were demonstrated.

The absence of emboli in our case was unusual, as was also the absence of emboli or infarctions at the postmortem examination. In view of the numerous vegetations present in the heart, and their friable condition, it is impossible to explain why embolic phenomena were not present.

16. Starling, E. H.: Linacre Lecture, Law of the Heart, London, Longmans Green & Co., 1918.
17. Lundsgaard, C., and Van Slyke, D.: Medicine **2**: 1-76, 1923.
18. Baehr, George: J. Exper. Med. **15**: 330-346, 1912.
19. Baehr, George: Significance of Embolic Glomerular Lesions of Subacute Streptococcus Endocarditis, Arch. Int. Med. **27**: 262-264 (Feb.) 1921.
20. Baehr, George, and Lande, Herman: Glomerulonephritis as a Complication of Subacute Streptococcus Endocarditis, J. A. M. A. **75**: 789-790 (Sept. 18) 1920.

INTRODUCTION OF COCCIDIOIDAL GRANULOMA INTO CHICAGO*

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Coccidioidal granuloma, a disease in many ways resembling blastomycosis and tuberculosis, but entirely distinct from them, results from infection with *Coccidioides immitis*, a mold of the *Ascomycetes* group. Since the first report of this disease by Wernicke [1] and Posadas [2] from Buenos Aires in 1892, which to date seems to be the only instance mentioned outside North America, there have been recorded about fifty additional cases, most of them from California. Rixford and Gilchrist [3] in 1896 reported the first two cases from California, and regarded as protozoon parasites the spherical-shaped organisms present in the tissues, the confusion having been introduced by Wernicke and Posadas in the original descriptions of the disease. Ophüls and Moffitt,[4] in 1900, however, demonstrated by cultures of organisms taken from lesions that the causal agent is a mold. Excellent summaries of the disease have been made from time to time by Hektoen,[5] MacNeal and Taylor [6] and Dickson.[7] Dickson's review, written in 1915, lists forty cases of infection in human beings; thirty-five of the patients lived in California, and three visited the state. Twenty-seven of the thirty-five state residents had lived or spent some time in the San Joaquin valley; of the other eight, only two gave a history of never having visited this region. Since Dickson's

* From the Pathological Laboratory and the Medical Service "A" of St. Luke's Hospital.

1. Wernicke, R.: Ueber einen Protozoenbefund bei Mycosis fungoides (?), Centralbl. f. Bakteriol. **12**: 859-861 (Dec.) 1892.
2. Posadas, A.: Psorospermiose infectante généralisée, Rev. de chir. **21**: 277-282 (March) 1900.
3. Rixford, E.: Case Report, Occidental M. Times **8**: 326 (March 5) 1894; A Case of Protozoic Dermatitis, ibid. **8**: 704-707 (Dec.) 1894. Rixford, E., and Gilchrist, T. C.: Two Cases of Protozoon (Coccidioidal) Infection of the Skin and Other Organs, Johns Hopkins Hosp. Rep. **1**: 209-251, 1896.
4. Ophüls, William, and Moffit, H. C.: A New Pathogenic Mould (Formerly Described as a Protozoon; Coccidioides Immitis Progenes), Preliminary Report, Philadelphia M. J. **5**: 1471-1472 (June 30) 1920.
5. Hektoen, Ludvig: Systemic Blastomycosis and Coccidioidal Granuloma, J. A. M. A. **49**: 1071-1077 (Sept. 29) 1907.
6. MacNeal, W. J., and Taylor, R. M.: Coccidioides Immitis and Coccidioidal Granuloma, J. M. Res. **30**: 261-273 (July) 1914.
7. Dickson, E. C.: Oidiomycosis in California, with Especial Reference to Coccidioidal Granuloma, Including Nine New Cases of Coccidioidal Granuloma and One of Systemic Blastomycosis, Arch. Int. Med. **16**: 1028-1044 (Dec.) 1915.

report, Lipsitz, Lawson and Fessenden [8] have reported a human infection from Missouri; Bowman [9] six more from California; Helsley [10] another from California; Lynch [11] one from Charleston, S. C., and Burkhead [12] one from Kansas.

When cultivated on artificial mediums, the mold grows out in a mycelium with hyphae. MacNeal and

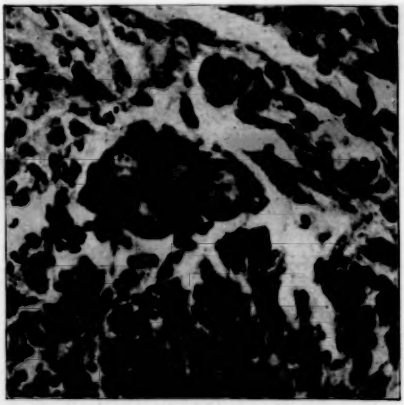

Fig. 1.—Coccidioides immitis in tissue: × 450.

ylor demonstrated in ascitic fluid cultures, grown anaerobically, multiplication by endogenous spore formation such as occurs within the animal tissues. This method of multiplication differentiates coccidioidal granuloma from blastomycosis. The parasites occur abundantly in the diseased tissues as doubly contoured spheres variously reported to be from 5 to 50 microns or larger in diameter. The protoplasm is granular. The spores develop within the protoplasm in numbers as many as a hundred or more, and, when grown sufficiently, are released by rupture of the capsule of the containing parasite.

The infection may be cutaneous, pulmonic (or both) or systemic. The cutaneous lesions resemble those of blastomycosis, but the ulceration in coccidioidal granuloma is said to be more extensive. Infection of the lungs produces symptoms like those of pulmonary tuberculosis, and even the lung lesions resemble very closely those of tuberculosis. With either form (or both) the infection becomes systemic, the regional lymph glands particularly are invaded and suppurate, and multiple abscesses appear in the viscera and the tissues generally. The prognosis is grave.

There seems to be no record from Illinois of coccidioidal granuloma in man.

REPORT OF CASE

A negro, aged 27, although claiming residence in Chicago for the last five and one-half years, was a Pullman porter on the Santa Fe Railroad train service between Chicago and Los Angeles, and his illness in Chicago followed a return trip from California. He entered the service of Drs. Arthur R. Elliott and Robert B. Preble at St. Luke's Hospital, March 6, 1923, complaining of a cough and of fever and pain in the chest. His illness began with a left pleurisy, Oct. 27, 1922, followed by pneumonia on the left side, which kept him in bed until December, 1922. Cough, fever, weakness and loss of weight continued, and about three days before he was admitted he began to have pain in the lumbar region of the back. Physical examination demonstrated left lung changes which suggested a chronic pulmonary infection, possibly tuberculosis. Blood examination revealed: red blood corpuscles, 4,160,000; leukocytes, 9,000; hemoglobin, 70 per cent. April 23, the leukocyte count was 17,100; May 3, 10,150. Repeated examinations of the sputum failed to demonstrate tubercle bacilli. March 7, thick, purulent fluid was recovered by thoracotomy in the left seventh interspace. April 12, tenderness opposite the back of the right sixth rib was noted, and when operation was performed, April 17, by Dr. A. E. Halstead, a portion of the rib here was necrotic and an extrapleural abscess was drained. April 20, this cavity was found to connect with another abscess in the mediastinum and with one in the right pleural cavity. From then on the patient gradually lost in strength, had an irregular fever, complained of pain in the back and, May 5, 1923, died after having spent sixty days in the hospital.

The postmortem examination, with Dr. J. A. Bargen, made less than an hour after death, included a complete external examination and an examination of the head and trunk but not of the neck. The essential changes demonstrated were: disseminated miliary gray nodules, fibrous tissue changes and atelectasis of the lungs; a healing abscess of the right lung, with drainage; multiple abscesses of the periaortic, peribronchial and retroperitoneal lymph glands; a huge right psoas abscess, unruptured, with suppurative osteomyelitis of the fourth lumbar vertebra, and suppurative necrosis of the lumbar intervertebral disks; acute fatty and parenchymatous changes of the liver and kidneys, and hyperemia of the lepto-

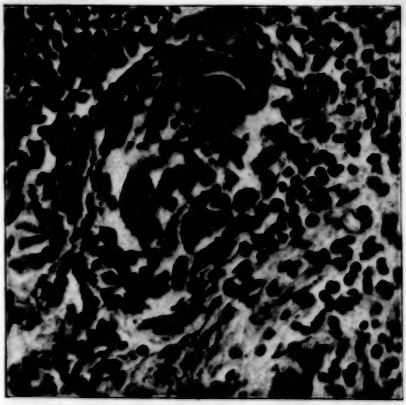

Fig. 2.—Spore-bearing Coccidioides immitis: × 450.

meninges. There were no cutaneous lesions or scars except those resulting from operative procedures.

Microscopic examination of tissue preparations from the psoas abscess and from the lymph glands disclosed extensive regions of necrotic tissue containing many polymorphonuclear leukocytes (abscesses). Spore-bearing and non-spore-bearing spheres with doubly refractive capsules, as shown in the accompanying photomicrographs, in all respects resembling *Coccidioides immitis*, were present in these necrotic places and

8. Lipsitz, S. T.; Lawson, G. W., and Fessenden, E. M.: Case of Coccidioidal Granuloma, J. A. M. A. **80**: 1365-1367 (April 29) 1916.
9. Bowman, W. B.: Coccidioidal Granuloma, Am. J. Roentgenol. **6**: 547-555 (Nov.) 1919.
10. Helsley, G. F.: Coccidioidal Granuloma, J. A. M. A. **73**: 1697 (Nov. 29) 1919.
11. Lynch, K. M.: Coccidioidal Granuloma, Including First Reported Case East of the Mississippi, South. M. J. **13**: 246-249 (April) 1920.
12. Burkhead, C. R.: Coccidioidal Oidiomycosis, J. Kansas M. Soc. **23**: 101-103 (April) 1922.

in the chronic granulation tissue of the abscess walls. Miliary abscesses containing similar parasites were present in the lungs, suprarenals and pancreas, but none were observed in the brain sections. The liver, kidney and spleen tissues were not examined microscopically. A mold, with characteristics like those reported for the parasite mentioned, was grown in culture from the psoas abscess.

Although miliary abscesses have not been demonstrated in all of the tissues examined, such lesions in the viscera were sufficiently widespread to afford a basis for the belief that the infection, at least terminally, became systemic.

COMMENT

This report, besides placing on record another instance of coccidioidal granuloma, concerns the possible permanent introduction of the disease into parts of the country which now are not infested. Judging from reports of this infection in Missouri, Kansas and South Carolina, the disease is either more widespread than has been thought, or it is slowly being carried into places which formerly were free. There may be some peculiar intermediate host or carrier in the natural transmission of the disease which makes human infection relatively infrequent and possible only in the natural habitat of such a carrier or host.

EXPERIMENTAL HERPES ZOSTER

PRELIMINARY REPORT *

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AND
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During the last three years it has been shown that the vesicles of herpes febrilis or herpes simplex contain a virus that can be readily transferred to the cornea of the rabbit, where it causes a keratitis and a purulent conjunctivitis. The disease can then be passed from rabbit's cornea to rabbit's cornea indefinitely. The rabbit is also susceptible to the virus inoculated directly into the brain, testicle, ovary, suprarenal and certain other organs, though subcutaneous inoculations have yielded uniformly negative results.

Lipschütz [1] inoculated the virus of herpes genitalis from vesicles on the female genitalia on the scarified skin of the thigh of the patient, and observed the appearance of a group of herpetic vesicles at the site of inoculation. Levaditi [2] produced vesicles in the skin of rabbits at the site of inoculation, using a herpetic virus that had been passed from rabbit to rabbit many times.

The experiments reported in this paper were carried out with the virus from a herpes lesion of the lip of a pneumonia patient. The virus was inoculated on the scarified cornea of a rabbit, and transferred at two or three day intervals to the cornea of a normal rabbit. The first rabbit, inoculated Feb. 7, 1923, died of a herpetic encephalitis, and the virus has continued since that time to cause a hundred per cent. mortality among adult rabbits inoculated on the cornea. Our strain of herpes virus is therefore an unusually virulent one for rabbits.

Tumor cells have been found to be particularly susceptible to some of the filtrable viruses, including, according to Levaditi, the virus of herpes. It is now well known that tumor growth can be called forth in mice and rabbits by painting the skin repeatedly with coal-tar at short intervals over a long period of time. It occurred to us that the skin of rabbits and guinea-pigs might become more susceptible to the virus of herpes when there is increased proliferation of the epithelial cells following the first, second or third application of coal-tar. This proved to be true; not only did typical vesicles develop at the site of inoculation of the herpes virus, but groups of vesicles appeared later in the tarred area along the distribution of the spinal nerve that supplied the area of skin inoculated. In some experiments, there resulted a band of vesicles extending across one side of the guinea-pig or rabbit from the middorsal to the midventral line, including the local site of inoculation in its confines, and showing no vesicles beyond the midventral or middorsal line, although the area of tarred skin extended beyond both these lines. The vesicles appear as whitish

Herpetic eruption in a guinea-pig following inoculation of the skin at one spot with the virus of herpes febrilis: The vesicles are distributed as in herpes zoster; the skin of the shaved area was subjected to three applications of coal-tar before inoculation; the site of inoculation, now ulcerated, is indicated by the arrow.

points surrounded by a red halo. As they increase in size, the red halos of neighboring vesicles may coalesce and the vesicles become more or less flattened pustules measuring from 1 to 3 mm. in diameter. There is a striking resemblance to the herpetic lesions of man. The pustules were shown to be due to the virus of herpes by this experiment: The contents of a pustule were inoculated on the scarified cornea of the right eye of a rabbit. A keratitis and purulent conjunctivitis resulted, and the rabbit's head showed the typical turning toward the right side on the fifth day. Another experiment is also of interest: The three spinal ganglions on the side of the site of inoculation and nearest the site of inoculation and the herpetic eruption were ground up in saline solution and inoculated into the brain of a normal rabbit. This rabbit developed an encephalitis, and the cell-inclusion bodies characteristic of the virus of herpes were found in sections of the brain. It seems, therefore, that when herpetic vesicles appear along the distribution of a spinal nerve on the skin of a rabbit that had been subjected to a preliminary

* From the Singer Memorial Research Laboratory, Allegheny General Hospital.

1. Lipschütz, B.: Arch. f. Dermat. u. Syph. **136**: 428, 1921.
2. Levaditi, C.: Ectodermoses neurotropes, 1922, p. 179.

treatment with coal-tar, the herpes virus is present in the corresponding spinal ganglion.

In these experiments, it appears that the herpes virus first multiplies at the site of inoculation in the skin and passes up the corresponding spinal nerve to its spinal ganglion; the virus then seems to pass centrifugally along the nerve and its branches to the skin, where, owing to the increased susceptibility produced by the application of tar, it multiplies rapidly and gives rise to characteristic herpetic vesicles. Another possibility is that the virus may travel from the site of inoculation to the main nerve trunk and then centrifugally along other branches of the nerve without first reaching and multiplying in the spinal ganglion. We feel certain that the secondary vesicles did not arise through accidental contamination of the surface of the skin with the virus, or through transfer of the virus by way of the lymphatic vessels of the skin and subcutaneous tissue, or by way of the blood stream. The distribution of the vesicles forces one to conclude that the virus passes along the course of the nerves to the skin, as in herpes zoster in man.

It is suggested that the method of applying coal-tar to the skin of experimental animals as a preliminary procedure to the inoculation may render it possible to transfer to the lower animals some of the skin diseases of man of unknown etiology.

CONSTRUCTIVE HEALTH ACTIVITIES IN PUBLIC SCHOOLS *

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IMPORTANCE OF SCHOOL HEALTH ACTIVITIES

The most far-reaching results to be anticipated in our nation-wide health movement will come from effective health activities in our schools—in our grade schools, high schools and universities. Especially is this true for our public schools. The impressions of childhood and the habits formed in early life are tenacious. Ingrain in our boys and girls health habits; correct physical conditions which are actual or potential handicaps; give them, by means of appropriate, wisely planned and graded instruction throughout their school period, an understanding of the fundamental principles of health promotion and disease prevention; instil in them a keen and impelling appreciation of the fact that the maintenance of sound, active, vigorous and harmoniously developed bodies is a moral obligation they owe to themselves, to their friends, to society and to their country; acquaint them with the methods and facilities at our command for promoting health and dealing with disease and subnormality, and much will be done toward solving our public health problem. "Give us the child and we will return the sound man" should be the challenge of every health worker.

Therefore, sound and wisely planned instruction in and supervision of health in our public schools must be given an important place in any movement which has for its object a sound, vigorous commonwealth.

Fortunately, we are as a nation beginning to realize the paramount importance of and the necessity for efficient school health administration and instruction. Twenty-nine of our states, by legislation, have made the teaching and supervision of school health and physical education compulsory. Others will follow their lead. The deplorable findings of the "draft" examinations, whereby it was revealed that more than one third of our nation's youths could not pass the tests for normal physical efficiency, and statistics compiled by various health agencies showing the prevalence of correctable or preventable physical defects in our school children and in those in the midperiod of life, were responsible for these legislative acts.

Twenty-five of the twenty-nine state actions came between 1915 and 1921. Naturally, school authorities were not prepared to meet the enormous demands for efficient health education and administration in our schools brought about by this sudden intensive and extensive interest in health. The demands for school health workers came as an avalanche. We are now in the process of digging ourselves out and getting our bearings.

School boards, superintendents, principles, teachers and parents are deeply interested in and concerned with this problem, for school health administraion and teaching should be and is of paramount interest to those concerned with public education. The problem, in most quarters, continues to be more or less foggy and obfuscating. Schoolmen, public health workers and others concerned must combine in their efforts to solve this problem and to evolve an efficient school health agency.

LACK OF BALANCE AND COORDINATION IN PRESENT SCHOOL HYGIENE TEACHING AND ADMINISTRATION

One of the chief contraventions to an efficient school health service is the "too many fingers in the pie" situation that maintains at present. Many independent agents are now engaged, or claim to be engaged, in the conservation of the health of school children. Physical education, athletics, instruction in physiology and hygiene, the school's health service, and outside official and voluntary health agencies—these are among the more or less independent active agencies which have a hand in the present-day interest in and administration of school health. The personnel involved in these activities, at one time or another, total or partial service, include: the physical educator, athletic director or coach, teachers of physiology and hygiene, school physician, dentist, school nurse and sometimes others, such as the sanitarian, representatives of the city's health department, and agents representing many voluntary health organizations.

Each of these agencies has played an important rôle in the evolution of school health education and administration. Each agency had its inception as a result of a distinct need. In general, these needs arose with the development of new sciences concerned with health conservation. Instead of the older, established agencies correlating, absorbing and applying new activities added from time to time to the program of school health conservation already on hand, new interests and organizations evolved to arrange for and apply the new phases of the work. Time will not permit going into the origins and functions of these, or of the invaluable contributions each has made and is making to the physical welfare of our school children.[1]

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Fourth Annual Session of the American Medical Association, San Francisco, June, 1923.

1. This subject is also discussed in "The Training of Teachers and Supervisors of Physical Education and School Health," Mind and Body, July, 1922, and American Physical Education Review, November, 1922.

With these various more or less independent agencies at work, however, there is little, if any, balance and coordination to the work, and a constructive program is sadly hampered. Often there is lack of sympathy, misunderstanding and even friction between them. Some phases are overemphasized, others slighted. The all-important follow up work is usually neglected. The pupil gets little idea as to the relative values of health instruction and practices. No wonder school administrators look askance at these disciples of Hygeia. "Too many cooks spoil the broth."

Furthermore, we must bear in mind that the person in charge of each of these health agencies, if trained at all, has usually been trained in and is interested in only one phase of heatlh conservation, and considers it more or less detached from the other phases. For example, the physical educator is trained in the theories and practices of exercise in its relation to physical development. Yet exercise is only one of a dozen or more approaches to health promotion. The school nurse, as a rule, has specialized along disease control and prevention, which is only one of the negative phases of the promotion of positive health. Examination into the training and interests of most of the persons now engaged in health work in our public schools will reveal the fact that each has his particular specialty "to put over," and that the lack of a broad vision and of adequate training in the fundamentals of health prevent him, as a rule, from seeing the relative value of his particular work and the place it should occupy along with other phases of health work in a genuine program of school health conservation.

REORGANIZATION AND CORRELATION OF SCHOOL HEALTH ADMINISTRATION NEEDED

In order to achieve real and far-reaching results in health teaching and supervision in our public schools, it seems to me that:

1. All agencies concerned with the physical welfare of school children must be correlated under one department of instruction and supervision. This would include physical education, athletics, hygiene instruction, the school's health service and the relationships with outside health agencies.

2. A full-time, adequately trained person should direct this department or activity—let us call it "school health and physical education."

TRAINING OF A NEW TYPE OF SCHOOL HEALTH SUPERVISOR

To achieve this new order of things, the first essential is the production of a new type of schoolman or schoolwoman—one well grounded in modern scientific theories and practices of health conservation.

The school health supervisor must know the fundamentals of health promotion and disease prevention. First of all, this new teacher and supervisor of school health must be trained "up to the minute" in the fundamentals both of health promotion and of disease prevention and control as they apply to humanity in general. Modern public health is emphasizing, more and more, health promotion—positive health and physical efficiency. This phase of public health is also termed physiologic hygiene. It is what the individual himself must know and practice in order to build up and maintain a high powered, smoothly running, efficient body machine, in order that he can carry on his economic burdens satisfactorily and serve best the society in which he lives.

There is no one approach to positive health. Many factors must be given due consideration: Food and nutrition: the balanced diet, quantitative and qualitative daily needs, including water, weight, overingestion, undernourishment and deficiency diseases. Air: ventilation, temperature, humidity, air in motion, air polution, climate and health. Physical activity and exercise: strength, endurance, and overfatigue. Rest and sleep. Bodily poisons: endogenous and exogenous, with particular reference to focal infections, autointoxication, alcohol, drugs and "patent medicines." Degeneration diseases and the rôle they play in our nation's morbidity and mortality. Shelter: clothing, home construction. Mental hygiene: emotional instability, psychoses and neuroses, rationalization, social adjustments. Prevention and correction of bodily defects, based on studies of draft examinations, school examinations and of statistics regarding other age groups. Physical examinations: importance of annual examination for early detection of degeneration diseases, etc., and its relation to life extension and longevity. Sex physiology and hygiene: sublimation of sex thought, imagination and desires, continent life and the single standard of morality, penalties of illicit sexual intercourse, venereal diseases. Heredity and eugenics: rôle of heredity and environment, Mendel's law, transmission of defective qualities, etc. Cancer. Goiter, especially where it is endemic. Accidents and injuries. "Safety first" and first aid.

The other important phase of public health interests and activities is that concerned with the prevention and control of communicable diseases. This is a community problem as well as individual—seeing to it that the other fellow is free from communicable disease germs. To develop a sound, vigorous and well set-up body is of little avail if one's bedfellow has active tuberculosis, or one's cook is a typhoid carrier.

The training of the new supervisor of school health and physical education, so far as the prevention and control of communicable diseases are concerned, should include, in general: (1) nature of communicable diseases: (*a*) historical conceptions, miasmatic theories; (*b*) germs—nature of, classification, distribution; pathogenic organisms—bacteria, protozoa, parasites; (*c*) epidemics and pandemics, historical considerations; (2) sources of diseases and routes of communication; (3) blocking the routes of communicable diseases; (4) the application of 1, 2 and 3 to the problem of school health.

No one can thoroughly understand and efficiently administer school hygiene unless he knows the fundamentals of health promotion and disease prevention and appreciates the relative values of the various "approaches" to positive health and normal development as they apply to those of school age. Efficient school hygiene is the application of these fundamentals to school children, with the proper emphasis on the various phases concerned. A thorough entrance physical examination of all school children with 100 per cent. "follow up" and 100 per cent. treatment is of greatest importance. Proper nutrition, exercise as involved in physical education and play, rest and avoidance of overfatigue, the correction and prevention of defects that are prone to come on during school age or during the preschool period, and mental hygiene with a view of preventing emotional instability are phases or approaches to the building up of a sound, vigorous and harmoniously developed body which should be

the direction of the board of health, and that the board of education and the parochial schools and the working children should all be included in a general health program. We shall help children better in that way than by endeavoring to reach them entirely through the public school system. I agree with Dr. Sundwall that physical education programs, health programs, and all methods of teaching health should be worked out carefully, and that a practical program should be submitted to the pedagogic force before it is given to the school children.

INSULIN IN TISSUES OTHER THAN THE PANCREAS

PRELIMINARY COMMUNICATION *

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Shortly after the discovery of insulin in extracts of the degenerated pancreas of the dog, Banting and Best [1] extracted other tissues by the same procedure as that used for the pancreas. Extracts of the liver, spleen, thymus and thyroid glands were prepared. The administration of the extracts of liver and spleen to diabetic dogs produced no appreciable effect on the blood sugar level of the animals. The extracts of thyroid and thymus caused distinct but transient lowerings of the blood sugar. Several of their collaborators have made unsuccessful attempts to prepare insulin from other tissues, such as the spleen and the liver. The increased yields which were obtained from pancreatic tissue in December, 1922, by a modification of the procedure previously used, made it seem advisable to us to reinvestigate this matter.

We have been able to prepare active extracts from the submaxillary, thymus and thyroid glands and from liver, spleen and muscle tissue. These extracts have been repeatedly tested on normal rabbits and have consistently produced a marked lowering of the blood sugar of these animals. A large dose produces typical insulin convulsions in the rabbits. The convulsions are alleviated by the administration of dextrose.

TABLE 1.—*Results Obtained by Administration of Extracts Other than Pancreas*

Tissue	Weight of Rabbit Gm.	Normal Blood Sugar Per Cent.	Lowest Blood Sugar Observed Per Cent.	Convulsions
Thymus	1,850	0.104	0.035	Very severe
Thymus	2,000	0.124	0.048	Severe
Thymus	1,850	0.104	0.036	Severe
Submaxillary gland	1,850	0.118	0.060	Mild
Submaxillary gland	1,850	0.118	0.066	Severe
Thyroid	1,650	0.130	0.072	None
Spleen	1,450	0.136	0.060	None
Liver	1,000	0.142	0.079	None
Liver	1,450	0.104	0.066	None
Liver	1,700	0.104	0.060	None

The number of units obtainable from 1 kg. of thymus or submaxillary gland tissue exceeds that originally obtained from pancreatic tissue. This yield is, however, only a small fraction of that obtained when pancreatic tissue is treated by our present procedure.

In Table 1 we have collected a few of the results obtained by the administration to normal rabbits of extracts from tissues other than the pancreas.

The blood sugar curve after an injection was followed for at least five hours in the majority of these experiments.

Extracts [2] of thymus gland, liver and spleen have been administered to diabetic dogs. They have consistently produced a marked lowering of the blood sugar and a diminution of the sugar excreted by the animals. A short protocol of one of the most interesting experiments is given:

The blood sugar of a dog, weighing 9 kg., five days after complete pancreatectomy, was 0.265 per cent. The sugar excretion varied from 5 to 10 gm. a day on a starvation diet. At 10 a. m., the blood sugar was 0.265 per cent. Ten cubic centimeters of thymus extract was injected subcutaneously. At 11:50 a. m., the blood sugar was 0.170 per cent; 2:30 p. m., 0.114 per cent.; 4:30 p. m., 0.095 per cent. The urine was sugar free. The clinical condition of the animal was definitely improved.

In collaboration with F. G. Banting, we have reported [3] the presence in the blood of various animals of a substance which we believe to be insulin. More recently we have observed that under certain conditions, at least, this substance is excreted in the urine.

TABLE 2.—*Results of Administering Insulin-Like Material from Urine*

Urine	Volume C.c.	Weight of Rabbit Gm.	Normal Blood Sugar Per Cent.	Lowest Blood Sugar Per Cent.
Normal	250	1,500	0.104	0.060
Normal	200	2,000	0.104	0.060
Normal	800	1,200	0.118	0.040*
Diabetic	1,500	1,500	0.118	0.110
Diabetic	1,200	2,200	0.130	0.130
Diabetic	1,400	1,700	0.110	0.136
Diabetic on insulin	1,000	1,500	0.110	0.066
Diabetic on insulin	700	1,500	0.110	0.066

* Conv.

Some of the results of the administration of material from the latter source to normal rabbits are shown in Table 2.

The average daily volume of the normal men from whom the first three specimens in Table 2 were secured was approximately 1,600 c.c. The volumes indicated in Table 2 opposite "diabetic" are one-half the twenty-four hour specimen. The volume of material administered to the rabbits was usually less than 10 c.c., and was prepared by various procedures which will be discussed in a subsequent communication.

Material from this source has been administered to diabetic dogs. The protocol of a typical experiment is submitted:

Four days after pancreatectomy, the blood sugar was 0.229 per cent. Ten cubic centimeters of the material was injected (equivalent to 800 c.c. of normal urine). Three hours later the blood sugar was 0.210 per cent.; five hours, 0.171 per cent.; nine hours, 0.104 per cent; eleven hours, 0.079 per cent. Sugar excretion of the dog during the twenty-four hours previous to the injection was 65 gm. Sugar excretion during the twenty-four hours following the injection was 6 gm. The diet was approximately the same on the two days. The volume of urine excreted was 500 c.c. on the first day and 100 c.c. on the second day. The animal appeared much brighter on the second day than on the first.

* From the Insulin Division of the Connaught Laboratories, University of Toronto.

1. Banting, F. G., and Best, C. H.: Lab. & Clin. Med. 7:251 (Feb.) 1922; 7:464 (May) 1922.

2. Before the extractive was added, the tissues were washed thoroughly with cold water to eliminate as much blood as possible.

3. Best, Scott and Banting: Proc. Roy. Soc. Canada, May, 1923.

We have secured results which tend to indicate that this substance, which we believe to be insulin, is excreted in somewhat greater amounts by pregnant women than by normal men.

Insulin is present in every tissue we have investigated.

INSULIN TREATMENT OF POSTOPERATIVE (NONDIABETIC) ACIDOSIS *

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The possibility of treating various types of nondiabetic acidosis with insulin must have occurred to many, since insulin causes such a rapid disappearance of diabetic acidosis.

We have treated three cases of postoperative acidosis with insulin,[1] causing almost immediate cessation of vomiting and ketosis; and although this is an extremely small number of cases, they are worthy of publication because, with the widespread interest in insulin therapy, our results may stimulate others to investigate in this field. The improvement in Cases 1 and 2 was quite as rapid and as dramatic as is caused by insulin in diabetic coma. In Case 3 the improvement was not as rapid at first with a small dose of insulin, but the condition rapidly cleared up with larger doses.

REPORTS OF CASES

CASE 1.—Mrs. F., aged 35 years, was operated on for a fibromyoma of the uterus, May 12, 1923, a supravaginal hysterectomy being performed under nitrous oxid-oxygen anesthesia. The patient's condition before and after operation was excellent. Twenty-four hours after the operation, she was considerably nauseated, and eructated gas frequently and vomited small amounts. This continued, and twelve hours later the pulse rate rose from 80 to 120, and a gastric lavage was performed but the solution returned colorless; 500 c.c. of 5 per cent. glucose solution was given intravenously over a period of two hours. The patient continued to eructate gas and vomit small amounts of bile-tinged fluid almost continuously. Forty-eight hours after the operation another gastric lavage was done with the same results. At this time the patient looked markedly dehydrated, had an anxious facies, and was unable to retain any nourishment. The pulse was 126, soft and poor in quality, and the urine showed two plus acetone, but no diacetic acid.

Six hundred cubic centimeters of 5 per cent. glucose solution was then given intravenously over a period of two hours, and immediately after this was started, 10 units of insulin was given hypodermically. Three hours after the insulin was given the urine contained only a trace of acetone, the pulse was slower and improved in quality, no further eructations or vomiting occurred, water was retained, and in twelve hours orange juice and other liquids as well; in twenty-four hours soft diet was retained, and the trace of acetone had disappeared from the urine. The convalescence was uneventful from this time on.

The first injection of glucose alone was not followed by any relief from the vomiting or the ketosis. The second injection of both glucose and 10 units of insulin was followed by cessation of vomiting and of the ketosis.

CASE 2.—Miss I. O., aged 16 years, was operated on, June 14, 1923, for duodenal ulcer, pyloroplasty being performed. The immediate effect of the pyloroplasty was prompt delivery of food from the stomach to the duodenum, and all seemed well. Then there arose an acute mesenteric ileus with duodenal obstruction.

June 16 and July 22, 500 c.c. of 5 per cent. glucose solution was given intravenously.

June 23, the patient was unable to retain food, was vomiting at frequent intervals, and her condition was precarious. The acetone in the urine was three plus. The patient was taken to the operating room, and a rapid posterior, short loop, gastroenterostomy was performed followed by transfusion with 500 c.c. of uncitrated blood.

June 24, the condition remained the same, and the same degree of ketosis was present. At 12:30 p. m., 500 c.c. of 5 per cent. glucose solution was given intravenously, and 10 units of insulin hypodermically. At 5 p. m., the acetone in the urine was reduced to a trace, glycosuria was present, and the pulse was considerably improved. Slight nausea was still present, and since the urine contained sugar it was safe to give another 10 units of insulin, which was done. At 1:30 a. m., the urine was sugar free and acetone free.

June 25, acetone gradually increased in the urine until at 11 a. m. it was again two plus. The blood sugar was found to be 0.1538 per cent.; and although no further nausea or vomiting had developed, in the presence of the increasing ketosis, 10 units of insulin was given. Since the blood sugar was still comparatively high because of unused glucose which had been administered, no further glucose was given, but the blood sugar was carefully watched. It was reduced in two hours to 0.0930 per cent., which was the lowest level reached, and no insulin reaction occurred. In the meantime the patient was retaining nourishment and the acetone was reduced to a trace.

The convalescence was uneventful from this time on, but it was twenty-four hours before the remaining trace of acetone had disappeared from the urine.

CASE 3.—K. K., a boy aged 5 years, suffering from residual infantile paralysis of the legs from an attack four years ago, was operated on, July 12, 1923, a transplantation being made of several tendons of the right leg and foot.

July 16, the patient had retained no nourishment and practically no water for four days. Nausea and vomiting had occurred, regardless of the ingestion of fluids. Acetone had been present continuously in the urine in increasing amoupts since the day after operation. Today it was three plus. Retention enemas or proctolysis of tap water, 5 per cent. glucose solution and a 2 per cent. sodium bicarbonate had been given at frequent intervals every day and had been absorbed. Saline solution was given intravenously once. The ketosis and vomiting had not been relieved or even alleviated. When I saw the patient at 11 a. m., he was dull and sleepy; he had the appearance of marked dehydration, with deeply sunken eyes, and a very soft, small, easily compressible pulse.

Two hundred and fifty cubic centimeters of 5 per cent. glucose solution was given intravenously immediately, and allowed to run in in an hour. Five units of insulin was given hypodermically. The blood sugar before this procedure was 0.1261 per cent., and two hours after was 0.1439 per cent. The vomiting ceased for about twelve hours, and a small amount of orange juice was retained. The next morning the ketosis was unchanged, and vomiting recurred, indicating that the dose of insulin was too small.

July 17, 500 c.c. of 5 per cent. glucose solution was given intravenously over a period of two hours, and 10 units of insulin as soon as the injection was started. One hour after the injection was stopped, another 5 units of insulin was given. The blood sugar before this procedure was 0.1612 per cent., and two hours after the last dose of insulin it was 0.1290 per cent., showing a definite insulin effect on the blood sugar content. No more vomiting occurred from this time. The urine acetone was diminished in ten hours, steadily decreased, and was completely absent in thirty-six hours. Further convalescence was uneventful.

COMMENT

These results cause one to consider what factors might be common to all types of acidosis or "ketosis." The fundamental nature or cause of the different common types of ketosis is not known. The groups under consideration are diabetic acidosis, postoperative

* From the Laboratories of Columbia Hospital.
1. The preparation used was Insulin-Lilly.

acidosis, starvation acidosis, and the acidosis of the toxemic vomiting of pregnancy.

Most observers are agreed that ketosis occurs in diabetes when the perverted metabolism of the body is unable to utilize sufficient carbohydrate to cause complete combustion of the necessary amount of fat, or when insufficient carbohydrate food is given. The essential factor undoubtedly is an abnormality in the carbohydrate metabolism. This phase of diabetes has been extensively and carefully studied, and a great deal has been learned.

The other types of acidosis mentioned have been investigated less, and very little is known about them. The essential facts may be summarized briefly: Ketosis and vomiting occur, although it is not always known which occurs first. These together form a vicious cycle, vomiting causing starvation, and the lack of nourishment further aggravating the ketosis. It has been found, almost empirically, that if carbohydrate is administered by rectum, subcutaneously or intravenously, the ketosis will gradually disappear. The vomiting ceases, and, with the return of tolerance for food, this may be resumed. If ample carbohydrate is given, the ketosis is permanently checked.

Recent investigations of the vomiting and ketosis of pregnancy by Harding and Potter[2] are of great significance in the entire field of nondiabetic ketosis. They have successfully treated many cases of vomiting and ketosis of pregnancy by administering glucose. It took from five to six days, on an average, for these patients to be free from vomiting and ketosis. They determined the amount of total nitrogen, ammonia nitrogen, urea nitrogen and acetone in the urine, and, from time to time, the amount of acetone in the blood, and the carbon dioxid content of the alveolar air. Even in the presence of marked ketosis, the carbon dioxid content of the alveolar air was found slightly lowered in only one case. The "acetone" content of the blood was found lower than in severe diabetes, but the amount of "acetone" in the urine was large, and comparable to the amounts in diabetes.

These authors were surprised to find that a comparatively small amount of glucose, about 50 to 100 gm., given subcutaneously or intravenously, was followed by a rapid clearing up of the case and by reduction of the high urinary total nitrogen excretion to normal. It seems to me that this can be explained by their own facts. Their patients were retaining no food, and were drawing on their own tissues for protein, fat and carbohydrate. In order to obtain the carbohydrate needed, the body had to break down its own protein to render available the 58 per cent. of carbohydrate value in protein. The amount of total urinary nitrogen averaged 7.5 gm. a day when the ketosis was most severe. This represents the utilization of about 45 gm., of body protein, which yields about 25 gm. of available carbohydrate. The burning of this amount of carbohydrate was not enough to prevent ketosis, but, compared to it, from 50 to 100 gm. of glucose is a large, rather than a small, amount of carbohydrate. Indeed, it is not unusual to have patients severely ill of diabetes with a carbohydrate tolerance of not more than 50 gm. (of available carbohydrate) remain both sugar free and "acetone" free on a properly balanced diet.

Harding and Potter arrived at the conclusion, which seems completely justified by their results and data, that if sufficient carbohydrate is supplied in cases of vomiting and ketosis of pregnancy, the ketosis is eradicated, the vomiting ceases, and the breakdown of body protein stops. Whereas this treatment eliminates this distressing complication, these authors are still at a loss to account for the cause which initiates this condition. Their studies, I believe, shed a great deal of light on ketosis and acidosis in general.

I believe that it is fair to presume that ketosis occurs when either insufficient carbohydrate is supplied to the body, or the metabolism of carbohydrate is subnormal. In either case there is insufficient combustion of the carbohydrate necessary to burn the fat completely; and ketosis, with its attendant symptoms, occurs. In diabetes, ketosis might be caused by either insufficient utilization of carbohydrate or an insufficient amount of carbohydrate food or by a combination of both of these factors.

In starvation, ketosis must be caused by absence of carbohydrate intake. In both the ketosis of toxemia of pregnancy and of postoperative "acidosis," it seems that some slight abnormality of carbohydrate metabolism may cause the origin of the ketosis, and that a vicious cycle supervenes, causing the symptom complex to persist. When this cycle is broken either by administering glucose so that it can be utilized, or by controlling the vomiting so that food can be taken, then the condition clears up.

Since insulin, when injected subcutaneously, causes an increase in the rapidity of the utilization of glucose in the body (both in normal and in diabetic patients), it seems rational that insulin ought to clear up postoperative ketosis and vomiting more rapidly than glucose alone. The cases described demonstrate this. Two of these patients were first given glucose without insulin, and no improvement followed. Furthermore, I believe, after an extensive experience with the intravenous use of glucose in postoperative cases, that the cases cleared up more rapidly when insulin was administered with glucose than has occurred in other cases when glucose was used alone. It must be admitted frankly that, with these two factors to consider, it cannot be absolutely determined which was the more important one. I did not feel justified in administering insulin alone in these cases, for with no available source of carbohydrate I feared a severe insulin "reaction." In fact, these patients needed fluids and carbohydrate nourishment very badly; and the only additional factor introduced was insulin in order to cause rapid utilization of the glucose injected. One case did offer an opportunity of observing the effect on ketosis of one dose of insulin alone. In Case 2, though the vomiting ceased almost immediately after an administration of both glucose and insulin, and the acetone in the urine decreased in a few hours from three plus to one plus, nevertheless the acetone again increased over night to the original amount, although vomiting did not recur. The blood sugar was found to be 0.1538 per cent., and a small dose of insulin, 10 units, was given. In two hours the blood sugar decreased to 0.0930 per cent., and acetone decreased in the urine from two plus to a trace. Although feeding was instituted at once, it was two days before this faint trace of acetone disappeared from the urine.

Encouraged by these results, I tried this treatment in a case of starvation acidosis due to pyloric obstruction. Here also a reduction of the ketosis and improvement in the general condition occurred; and although

2. Harding, V. J., and Potter, C. T.: The Excretion of "Acetone" and Nitrogen in Nausea and Vomiting of Pregnancy, Brit. J. Exper. Path. 4: 105, 1923.

the patient died several days later of myocardial weakness, the insulin result was similar in all respects to those obtained in the postoperative cases.

It seems almost unnecessary to add a caution about the danger of using insulin without providing the body with at least 2 gm. of glucose for every unit of insulin injected. In these cases of vomiting, carbohydrate food cannot be given and absorption of glucose by rectum is uncertain; therefore glucose should be administered either subcutaneously or intravenously. If glycosuria follows, it is safe to inject more insulin as long as the glycosuria persists. If the urine remains or becomes sugar free, additional insulin injections must be controlled by frequent blood sugar determinations. These patients must be watched even more carefully than diabetic patients who are given insulin therapy. This was felt so strongly that in Case 3, in a child, such a small dose of insulin was given at first that, although vomiting ceased temporarily, the ketosis was unaffected. Only when larger doses of insulin were given the next day did the ketosis as well as the vomiting cease.

Our interest in the entire field of ketosis has been stimulated by this use of insulin. We are investigating at present the possibility of there being a diminished glycolytic power of the blood after anesthesia and operation. This may prove to be an index of a postoperative abnormality in carbohydrate metabolism, just as Miss Perry and I [3] have found a diminished glycolysis in the blood from diabetic patients. If this proves to be so, it would correlate with the postoperative increase in blood sugar.

I believe that injections of insulin and glucose together may be a considerable aid in rapidly clearing up ketosis and vomiting of pregnancy, and am anxiously awaiting an opportunity to try this in a series of cases. This treatment will also be tried in cases of cyclic vomiting and ketosis in children.

CONCLUSIONS

Injections of insulin and glucose solutions in a small series of cases of postoperative vomiting and ketosis have apparently cleared up these conditions rapidly: much more rapidly than has been accomplished, in my experience, with injections of glucose alone.

Insulin therapy must be given and controlled even more carefully in cases of this type than in cases of diabetes.

3. Thalhimer, William, and Perry, Margaret, C.: Diminished Glycolysis in the Blood in Diabetes, J. A. M. A. 80: 1614 (June 2) 1923.

Hemolytic Streptococci.—It has long been known that the hemolytic streptococci which can infect man are of many different antigenic varieties, and the recent work of Dochez, Avery and Lancefield has indicated that many of these organisms can be divided into at least four groups. According to the earlier work of Pirquet, Dochez and his associates, and Tunnicliff, the streptococci which are associated with cases of scarlet fever seem to constitute a separate type. However, in recent cultural studies, Rice has found marked cultural differences between organisms from this source. This question is still an open one, though the mass of evidence seems to point to a general serological similarity between the scarlatinal hemolytic streptococci. There are, nevertheless, a large number of hemolytic organisms which cannot be grouped together, and in which serological reactions seem to shade one into the other. In the viridans groups, this heterologous condition is still more marked, and studies such as those of Kinsella and Swift show that these organisms are as varied as are the Type IV pneumococci.—Zinsser: Infection and Resistance, the Macmillan Company, 1923.

HEALTH HAZARD FROM AUTOMOBILE EXHAUST GAS IN CITY STREETS, GARAGES AND REPAIR SHOPS

THE VERTICAL EXHAUST AS A PRACTICAL MEASURE OF AMELIORATION *

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The exhaust gas of automobiles is extremely poisonous. Even when entirely odorless, colorless and free from soot, it is much more poisonous than any ordinary form of smoke. This fact is well established, and in recent years has been widely published both in scientific journals and in popular magazines and the daily papers. Nevertheless, the public is in large part either still ignorant of it, or acts as if it were ignorant. No mere dissemination of information will stop drivers and mechanics from taking chances. Positive protection for the public and removal of danger for the careless individual are needed. The conditions in streets which result in exhaust gas invading shops, offices and even residences have reached a point beyond which they should not be allowed to grow worse.

This paper defines and describes (for the first time, we believe) the conditions now existing in congested streets. The observations were made chiefly in New York, but to some extent also in a smaller city (New Haven, Conn.). They apply in large measure to congested streets in all large cities, and to the business portions even of cities and towns of moderate size. These investigations show the conditions to be much more seriously inimical to health than has heretofore been supposed.

There is a simple, rather obvious, and easily attainable remedy for the more immediately pressing aspects of these conditions. After much study of the problem during this investigation, this remedy is the only one yet suggested which appears practical for public enforcement, and fitted to afford a large measure of amelioration of conditions.

Mechanically, this measure consists in arranging that the exhaust gas of automobiles should be discharged upward and thus out of the respiratory zone of street air, instead of being discharged, as at present, against or along the ground so as to contaminate the respiratory zone of our streets to the greatest possible extent. In garages, vertical exhaust renders the problem of ventilation simple, while under present conditions it is so difficult as to be almost insoluble.

Legally, this remedy requires merely that the state licensing authorities charge an additional $10 to $25 a year on all cars that continue to pollute the air by the present form of low or horizontal exhaust, remitting this charge on cars having vertical exhaust. The cost of altering a horizontal into a vertical exhaust is small. On cars with fixed tops or touring cars with their tops up (and very few cars without tops are used nowadays) the arrangement of a pipe at the back of the car to discharge vertically is not seriously disfiguring.

THE CONDITIONS IN ROADS AND STREETS

In the open air of a country road, or even a city street where traffic is not congested, it would appear

* From the Laboratory of Applied Physiology, Yale University.
* The data and discussion presented in this paper are abbreviated and generalized from a report to the New York Academy of Medicine.

that the extent to which the exhaust gas is diluted with air must be sufficient to remove virtually all toxicity. On the other hand, in congested areas, where stalled traffic is of frequent occurrence, the amount of visible smoke and the smell are together sufficient to indicate a degree of contamination of the air distinctly disagreeable, even if not positively unhealthful.

Neither smoke nor smell is, however, a reliable index of the toxicity of exhaust gas. Carbon monoxid is colorless, nearly odorless, and may be produced in high concentration (from 5 to 6 per cent.) even when accompanied by neither smoke nor smell. The amount depends chiefly, as the investigations of Fieldner and his collaborators in the Pittsburgh Experiment Station of the U. S. Bureau of Mines have shown, on the adjustment of the carbureter, while smoke and smell come chiefly from excess of oil. Unfortunately, with the carbureters in common use, flexibility of adjustment is lacking. The driver is prone to adjust the flow of gasoline to provide the maximum of power obtainable from the engine; and in doing so, as Fieldner and his co-workers have shown, he uses a rich mixture, which is both excessively wasteful of gasoline (up to a third of its fuel value), and likewise is productive of an exhaust gas containing considerable amounts of such products of incomplete combustion as hydrogen, and particularly carbon monoxid.

It is important, therefore, to determine as exactly as possible the concentration of carbon monoxid occurring in the space near, and especially behind, automobiles both when standing and when moving in the open air, as a preliminary to the analysis of conditions occurring in the streets where traffic is most dense. We began our work, therefore, by a series of observations showing the distribution of the exhaust gas back of a car when standing still, but with the engine running. In such observations on a Ford car it was found that the gas is distributed in a cone or horn shaped space which spreads out in the manner shown by the first car on the upper level of the accompanying illustration, so that the head of a man standing a few feet back of a car is surrounded by an atmosphere containing from 4 to 6 parts of carbon monoxid. (Methods of sampling and analysis are given farther on.) When a car is moving at 10 miles an hour, this cone is elongated in the manner shown by the first car in the lower level of the illustration; thus, the occupants of a car following another at a distance of about 30 feet are surrounded by exhaust gas diluted to a concentration of 1 or 2 parts of carbon monoxid in 10,000 of air. Any appreciable wind, of course, affects conditions favorably, while a damp, still day tends to render them worse.

With these general points established, we next proceeded to equip a small car (Ford) with batteries of sampling cans and bags and bottles. The latter utensils were employed for so-called "snap" or "grab" instantaneous air samples, which were usually taken just behind an omnibus or truck, or when traffic was stopped and crowded at a cross street, and especially when it was just starting again. The cans were connected with a pipe leading to a funnel on the wind shield through which air was drawn in as water flowed out through a small opening in the bottom of the can. Such samples were drawn for a quarter, or half, or even three quarters of an hour at a time while the car was being driven through the streets at the speed of other traffic. They represent the average conditions to which the occupants of that car, and indeed every one in these streets, were exposed during the period of the sample.

In general, the attempt was made to obtain samples showing the conditions when traffic was light or of only moderate volume, and again when it was most dense; particularly during rush hours, and both during clear, windy days and on others when the air was damp and still. The following abbreviation of the protocols of the investigations shows the methods employed and the general character of the results obtained.

METHOD OF TAKING SAMPLES

All the samples of street air were taken from a moving car which passed along with the general trend of traffic. The continuous or average samples were taken through a long rubber tube leading from a funnel which was attached to an upright on the side of the car usually beside the driver's seat and at about the height of his head.

All the samples were carried to the laboratory within a few hours and either analyzed immediately or preserved until the next day under conditions which were shown to involve no change in the carbon monoxid content. For the determination of carbon monoxid in the low concentrations occurring in street air, it was necessary to collect samples of at least 1 liter. Three methods were employed:

1. *Rapid Samples.*—For this method of sampling, basketball bladders of thin sheet rubber were used, and the air to be collected was blown into them by means of a hand bulb. The period required for filling was about ten seconds. All such samples were transferred to glass or metal containers before appreciable diffusion of gas through the rubber could occur, as shown by careful tests on this matter.

2. *Nearly Instantaneous Samples.*—Two-quart Mason jars were completely filled with water and closed with a cap. To obtain a sample, the jar was inverted and the cap was removed. The water spilled out in one or two seconds. While the jar was thus filled with the air for examination, the cap was at once put on again and clamped down.

3. *Method of Obtaining Samples for Average Concentration of Carbon Monoxid in the Air for Considerable Periods.*—For this method, an automatic sampling device was used, consisting of a square 4-liter metal can into which two tubes were inserted and soldered. The first ran through the top of the can to within 1 cm. of the bottom, while the second was inserted flush with the surface 2 cm. from the bottom of the can. To the latter tube was attached by means of a rubber connection a glass tube of capillary caliber to afford an outflow such as would drain the can at the desired rate of air sampling. The can was filled with water beforehand. A battery of twelve such cans was usually taken on the car.

Method of Analyzing the Concentration of Exhaust Gas for Carbon Monoxid.—Samples taken directly from the exhaust of a standing car were analyzed by means of the Orsat apparatus using an ammoniacal cuprous solution as the absorbent. This method is correct to about 0.2 per cent.

Iodin Pentoxid Method.—Air samples taken from the street were analyzed by this method in the form worked out by Teague in this laboratory. The method is exacting and complicated, but under carefully controlled conditions yields an accuracy of 0.001 per cent. of carbon monoxid in air, or 0.1 part in 10,000.

The following are quoted as typical observations from a large mass of data. In nearly every case the highest concentrations of carbon monoxid were found in samples taken in stalled traffic or behind omnibuses or trucks.

RESULTS

Sunday, July 13, 1922. Weather clear, temperature 74 F. in the street, fresh to strong northwest wind. Traffic light, chiefly omnibuses and taxicabs, sometimes only three or four cars to one block; maximum, thirty-four cars. Smoke noticeable when traffic stopped at cross streets. Obtained fourteen samples of street air between 3 and 4:30 p. m. on Fifth Avenue between Fourteenth and Eighty-Eighth streets. Analyses showed a range of contamination as follows: lowest, 0.1; highest, 0.64; average, 0.32 parts of carbon monoxid in 10,000 of air.

Saturday, July 19, 1922. Weather overcast with slight rain; temperature 68 F. in street. Traffic light. Obtained sixteen samples between 12:40 and 2 p. m. on Fifth Avenue between Fourteenth and Seventy-Second streets. Lowest, 0.5; highest, 2.6; average, 1.12 parts

of carbon monoxid in 10,000 of air. Continuous sample going downtown showed 0.6 parts of carbon monoxid, and another coming uptown showed 0.9 part of carbon monoxid in 10,000 of air.

Wednesday, July 23, 1922. Weather fair, strong west wind. Moderate traffic. Obtained twenty-seven quick samples between 11:50 and 1:05 p. m. on Fifth Avenue from Washington Square to Seventy-Second Street. Lowest, 0.2; highest, 4.6; average, 1.28 parts of carbon monoxid in 10,000 of air. Continuous sample going downtown showed 0.6, while that during drive uptown contained 0.9 part of carbon monoxid in 10,000 of air.

Monday, July 28, 1922. Weather mild. Considerable traffic. Obtained nineteen quick samples on Fifth Avenue between Thirty-First and One Hundred and Twenty-Fifth streets. Lowest, 0.2; highest, 3.1; average, 1.47 parts of carbon monoxid in 10,000 of air. Continuous samples going downtown and uptown showed, respectively, 1 and 0.92 part of carbon monoxid in 10,000 of air.

Thursday, Aug. 8, 1922. Weather mild. Light traffic. Obtained fifteen quick samples on Fifth Avenue between Thirtieth and Eighty-Eighth streets. Lowest, 0.2; highest, 2.9; average, 1.31 parts of carbon monoxid in 10,000 of air. Four continuous samples over different stretches of streets and varying from fifteen to forty-five minutes showed 1.35, 1.1, 1.56 and 1.42 parts of carbon monoxid in 10,000 of air.

Thursday, Sept. 28, 1922. Clear, cool, dry day. Traffic light. Continuous samples were taken from ten to twenty minutes each between 4:30 and 5:30 p. m. in Union Square, Washington Square, East Broadway, Waverly Place and up and down Fifth Avenue. The concentrations of carbon monoxid found were 0.7, 0.6, 1.2, 1.4, 0.9, 1.2, 2.1 and 1.5.

Saturday, Feb. 24, 1923. Weather very cold, with gusty winds. Obtained seven quick samples along Fifth Avenue and in and around taxicab stand at the Pennsylvania Railroad Station. Analyses showed concentrations of 0.65, 1.05, 0.65, 0.4, 0.1, 1.5 and 1.3 parts of carbon monoxid in 10,000 of air.

From these observations it appears that during moderate traffic and on clear, windy days, the conditions in the streets are on the average such as imply no appreciable health hazard. But even at such times a stop back of several other cars resulted in obtaining "snap" samples of air of a fairly high contamination of carbon monoxid. Almost without exception, such relatively high concentrations were found back of omnibuses and trucks with tops. Owing to their large engine power and gasoline consumption, and their frequent stops and starts, when an especially large volume of carbon monoxid is produced, the omnibuses do more to contaminate the air than any other equal number of vehicles, with the possible exception only of large trucks. Owing to the height and width of the omnibuses, they tend to draw after them in their wake a mass of air containing an unusually high concentration of exhaust gas. From their engine power and gasoline consumption it may be estimated that an omnibus or large truck contaminates each minute a volume of air equivalent to a space of its width and height and from 100 to 200 yards in length. Owing to the direction in which the exhaust is discharged, the gas tends to accumulate and hang in the street in a layer only from 5 to 10, or at most from 15 to 20 feet deep. During periods of congested traffic, even the samples drawn continuously for considerable periods yielded on analysis amounts of carbon monoxid which fall little below the "snap" samples mentioned above.

While the results are variable, as might be expected, according to atmospheric conditions and the amount and movement of traffic, the figures obtained show conclusively that one part of carbon monoxid in 10,000 of air is a quite frequent condition in streets where traffic is heavy; and two parts of carbon monoxid are not unusual. Even more than this occurs in limited areas and for short periods.

CONDITIONS AND STANDARDS

With these broad facts before us we may consider to what extent the conditions are unhealthful in the light of the now accepted standards of allowable vitiation of air. The first extensive investigation for the establishment of a standard was carried out by Dr. J. S. Haldane on the air in the London underground railways. At that time (1896), steam engines furnished the motive power for the trains in the London subways, and coke was the fuel. The conditions were very bad, but need not be detailed here. Dr. Haldane was led finally to the conclusion that a maximum of 1 part of carbon monoxid in 10,000 of air was the standard that should be required in the London underground railway system.

Three years ago, in collaboration with the U. S. Bureau of Mines, we carried out an extensive series of investigations to determine a standard for the use of the commissions and engineers engaged in constructing the New York and New Jersey vehicular tunnel. For the tunnel itself a standard allowing a maximum of 4 parts of carbon monoxid in 10,000 of air was finally recommended and adopted. This standard, however, was expected to apply only to passengers making the transit of the tunnel in less than one hour and usually in less than half an hour. It was expressly pointed out that employees and policemen, who would necessarily be in the tunnel for a longer time, should be protected by an extra amount of ventilation of their stations. While somewhat differently expressed, the conclusions reached by Haldane and by us are virtually identical. The following general rule was formulated to apply to periods of not more than a few hours:

When the time is measured in hours and the concentration of carbon monoxid is expressed in parts in 10,000 of air, the physiologic effects may be defined by the equations:

$$\text{Time} \times \text{concentration} = 3, \text{ no perceptible effect.}$$
$$\text{Time} \times \text{concentration} = 6, \text{ a just perceptible effect.}$$
$$\text{Time} \times \text{concentration} = 9, \text{ headache and nausea.}$$
$$\text{Time} \times \text{concentration} = 15, \text{ dangerous.}$$

The meaning of this rule is that, in the specific conditions here under consideration in city streets, the breathing of air containing 1 part of carbon monoxid for four hours by a person sitting at rest and breathing quietly produces essentially the same effect as breathing air containing four parts for one hour.

Physical exertion (even walking at an ordinary pace) and increased breathing accelerate the absorption of carbon monoxid into the blood and thus reduce the figure in the first equation from 3 to 2 or 1, or even less, and affect the other equations correspondingly. In other words, a man walking or working breathes a much larger volume of air than one sitting at rest, and the rate of absorption of carbon monoxid is correspondingly augmented. The conclusion to be drawn from these facts is that the contamination of the air in the more congested streets of American cities during hours of heavy traffic reaches the upper limit, and for shorter periods even exceeds the upper limit, of a well founded health standard. It approximates the concentration that should be allowed only in tunnels, if the persons exposed are to continue to breathe the atmosphere for many hours.

The conditions at present in such streets as those which we have particularly examined are, however, only a partial indication of the health hazard which the near future is practically certain to produce. At present the fuel chiefly sold in the metropolitan district of New York seems to be almost wholly the so-called "gasoline" distilled directly from petroleum. The exhaust gas from such fuel contains, as its sole considerable toxic constituent, the carbon monoxid which arises from the incomplete combustion in engines whose carbureters are set for rich mixtures.

In other sections of the country (the Pacific Coast, for instance, and eastern Massachusetts), much more toxic fuels are already in general use, and are practically certain to be utilized everywhere in the not distant future. In fuels adulterated with cracked petroleum, coal distillate, and other like materials, there is often a high content of benzene and related substances. From the standpoint of the energy obtainable there is no objection to these fuels. Indeed, some of them are distinctly superior in starting cars in cold weather. But to the already too great health hazard of carbon monoxid, they add that of other toxic substances.

The vapor of benzene is now recognized as one of the most harmful of all the vapors occurring in industry. Its effects are cumulative and progressive, resulting in anemia, nervous disorders and probably a heightened proneness to tuberculosis. This hazard will be added to that from carbon monoxid as soon as adulterated fuels come into more general use. Furthermore, the automobile industry is devoting considerable effort to the development of some "antiknock" chemical substance, which can be added to gasoline so as to allow a higher degree of compression in the cylinders without a premature explosion. This would be a considerable technical improvement as regards the efficiency of automobile engines and their economy of fuel. Some of the substances suggested for this purpose are, however, acutely toxic; so much so that their use would add not only to the industrial hazards of workmen in garages, assembling and repair shops, but would seriously threaten the health even of pedestrians on streets of dense traffic.

For these reasons it is essential that now, before worse conditions develop, steps should be taken to ameliorate the hazards to health and life arising from the inhalation of automobile exhaust gas. The enactment of certain requirements either in state law or in city ordinances, and also provisions for supervision of automobile fuels and engine construction, are necessary to this end. The matter cannot be left to the voluntary action of the automobile industry. It is well known to this industry that, as the investigations already referred to in relation to the New York-New Jersey vehicular tunnel have shown, the carbureters on most passenger cars are extremely wasteful of gasoline, and that they are correspondingly productive of an exhaust gas rich in carbon monoxid and of high toxicity. But, as the secretary of one of the largest automobile manufacturers recently remarked to one of us, "We are in business to make and sell cars. We will conform to any requirement regarding health hazards only when the public demands it and the laws enforce it." It must be said in extenuation of this attitude, however, that the perfect carbureter is yet to be invented; and also that drivers of cars are usually negligent or ignorant in the adjustment of the present carbureters to the greatest efficiency and least toxicity in the exhaust gas. Ignorance and neglect of the laws of nature, however, excuse or protect no one from asphyxia.

VERTICAL EXHAUST AS A MEASURE OF AMELIORATION

The exhaust gases from automobile engines are far more toxic than the smoke which rises from the chimneys of dwelling houses or from the smoke stacks of most factories, or the funnels of locomotives. In amount, the total volume of exhaust gas discharged in some single streets is not less than that of a large factory or power plant. For the smoke from dwelling houses and factory furnaces, chimneys are provided, and, indeed, required by law, to discharge as high into the upper air as possible. The reason for this seems to arise from the fact that smoke from coal or wood nearly always carries with it dust and soot that can be seen or which contains substances irritating to the eyes.

It is a striking and surprising fact that in spite of modern scientific knowledge and in spite of the extensive legal protection now afforded the public health, automobiles are almost always built so as to discharge their exhaust gas near the ground, instead of vertically upward as all other smoke and noxious vapors are delivered. If the exhaust gas of automobiles constantly contained soot particles, or what we term "smoke," there would never have been any question that the automobile engine should be provided with a chimney. From a chimney any hot vapor rises in a mass; the gases now mixed with street air, on the contrary, can escape, for the most part, only by slow diffusion. In large cities each new tall building increases the average distance through which gases must diffuse upward, and hence lengthens the time required for them to escape from the streets. Each new boulevard or bridge adds to the number of cars entering the city. The traffic conditions in lower New York, for instance, will be greatly intensified by the opening of the vehicular tunnels to Jersey City two years hence.

In brief, therefore, the measure of amelioration which seems practicable and efficient is the requirement by law that all trucks and omnibuses, all taxicabs and other commercial vehicles, and all passenger cars with permanent tops should be required to discharge their exhaust gas through a tube extending vertically upward for at least a few inches above the highest point of the roof. In the case of trucks it should rise above the driver's head, and on omnibuses over the heads of the roof passengers. We are convinced that there is nothing impracticable or bizarre, and nothing that will be in any way unfair or oppressive to the automobile industry in this requirement. It is not necessary that, at the present time at least, this requirement should be applied to open cars, or to touring cars when their tops are down, for the percentage of vehicles of this class in large cities is so small that their exemption from the requirement of vertical exhaust would not be serious.

Fortunately, we have been able to observe the working of vertical exhaust on a number of cars, for in some cities it is already the custom for bakery wagons to be fitted with a pipe, which is connected with the exhaust and passes vertically upward at the back of the car. This arrangement prevents vapors from penetrating the inside of the bakery delivery wagon, where it would impart an odor and flavor of gasoline to the food. No appreciable loss of power results, in the opinion of automotive engineers whom we have consulted. Nor is the appearance such that even the owner of the most luxurious limousine would have any just ground of complaint once the slight initial strangeness of the appearance of vertical exhaust was removed by its being universal.

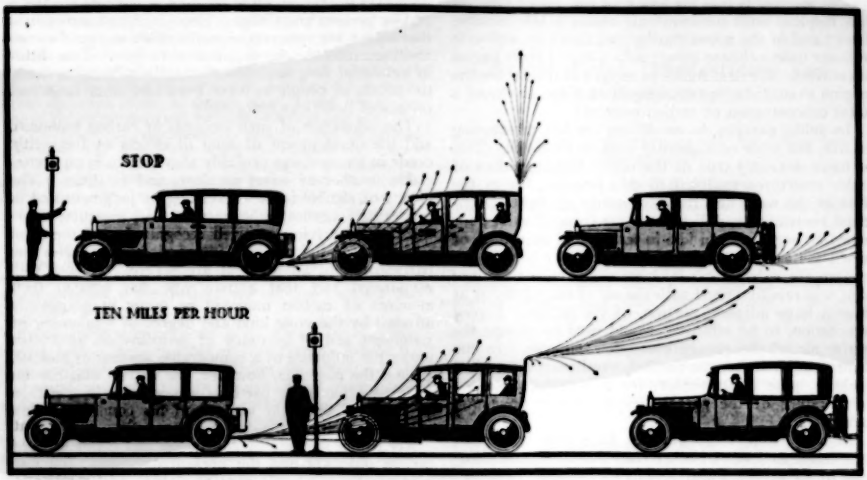
An objection to vertical exhaust which seems to occur to many persons is that exhaust gas would then be likely (they think) to enter houses through any open windows. In fact, however, a little consideration of the principles of ventilation and of the particular conditions involved in this problem indicates that we have

at present the worst possible conditions as regards invasion of shops, offices and homes by exhaust gas, and that the vertical exhaust would almost completely prevent this invasion.

This may be shown as follows:

The air of buildings in general enters through the ground floor or even through the basement, and not through any opening in an upper story. The air in buildings is always warmer than that outdoors, except only in the middle of the day in very hot weather. At all other times, even without artificial heating, the breath and warmth from the bodies of persons occupying buildings are sufficient to produce a continual upward movement of the air within the building. When an upper window is opened, unless there is a strong wind outdoors, air passes out and not inward. Steam heat in winter greatly increases the force of this movement. In consequence of this condition, air enters by every opening—doors, windows, gratings, areaways—at the base of the building. As it is warmed, it passes upward, so that even the rooms on the tenth and twentieth floors are supplied with air drawn initially from the street. In an office in the winter time, one breathes the same air as that in the bank at the street level many stories below.

Now let us consider the composition and stratification of the air in the streets where there are cars—the air as it is and as it should be. Exhaust gas has about the same specific gravity as air of the same temperature, but, being very hot, it is much lighter than street air. If started upward without too much dilution and admixture with cooler air, the gas would therefore rise in a fairly compact mass and escape out of the street and pass away over the roofs like a puff of smoke. At present, on the contrary, the discharge of exhaust gas within a few inches of the ground, and the draft which follows a moving car, together produce so thorough a mixture of the gas with the street air that the heat is dissipated and there is very little tendency for the gas to rise from the street thereafter. The mixture in the wake of a car is so complete that in the tests for the New York-New Jersey vehicular tunnel it was found that in a tunnel it would make little difference whether air was drawn out at the top and fresh air fed in at the bottom, or vice versa. Thus the present mode of exhaust not only contaminates the air in the streets, and the shops and apartments at street level, but also, owing to the rise of air in the buildings, it produces contamination of the air even in the upper floors of tall buildings. The vertical exhaust, on the contrary, instead of causing the invasion of buildings will render them nearly free from the gas which at present is mixed at street level and is then drawn in and upward as described.



Upper line, distribution of exhaust gas from cars standing still with engine running; first and third cars have horizontal exhaust; second car, vertical exhaust. Lower line, distribution of exhaust gas when cars are running at 10 miles an hour.

The general point for the vertical exhaust is this. Large as is the volume of exhaust gas produced in the streets, it is probably only a small fraction of the total amount of carbon monoxid discharged into the air of a city. During the winter, when every building is heated, nearly every chimney continually discharges more or less carbon monoxid mixed with carbon dioxid. The total amount of carbon monoxid thus produced is certainly ten times, perhaps a hundred or even a thousand times, as great as that produced by automobiles. Yet this huge amount of gas causes us no trouble, while the relatively small amount from automobiles is of serious concern.

The difference arises from the fact that for the fumes from our coal furnaces we employ chimneys, but for these gases from automobiles we do not, as yet. The remedy for the health hazard of exhaust gas lies, not in some new invention, but in one of the oldest and best known devices, namely, the chimney. The health of the traffic policemen (now in some cases subject

daily to typical carbon monoxid headaches) is by itself a sufficient reason for introducing the vertical exhaust.

THE CONDITIONS IN GARAGES AND REPAIR SHOPS

Each winter there occur throughout the country dozens, perhaps hundreds (precise figures are not available) of those deaths in private garages which are so definite in type and so well explained that they should no longer be called "accidents." Recent investigations have shown that even a small car produces one, and a large car or truck two or more, cubic feet of carbon monoxid per minute. When the engine is run idle to warm it on a cold day with the garage doors closed, the atmosphere of a space large enough to hold a car is contaminated to a very dangerous extent (25 parts of carbon monoxid in 10,000 of air) within five minutes, and to a rapidly fatal extent in ten minutes. The danger is insidious. The first indication that the victim receives is that his legs give way under him; he lies helpless until consciousness ceases a few minutes later; and in the accumulating gas, death by asphyxia follows unless chance brings help within a short period thereafter. There is sufficient oxygen in the air for the engine to continue to run, long after it has produced a fatal concentration of carbon monoxid.

In public garages the conditions are less threatening to life, but more continuously inimical to health. This is more distinctly true of the newer buildings than of older structures modified to this purpose, for in the former the walls and roof are nearly air tight. Artificial ventilation is difficult and far from effective; for when an engine is run idle in testing and adjusting, or when the car moves slowly in entering or leaving the garage, the exhaust gas is blown out in such a manner that it is rapidly mixed with the air of the whole, or at least a large adjacent portion, of the garage. Forced ventilation, to be effective, would need to change the entire air of the garage every few minutes. In the winter when it is most needed, ventilation on such a scale is quite impracticable, for it would reduce the temperature of the garage nearly to that prevailing outdoors.

Actually, few large garages have any system of ventilation to speak of other than that of simple diffusion of the gases outward and of air inward. In consequence of this, partial asphyxiation resulting in the typical carbon monoxid headache is a frequent and, in some cases, an almost daily occurrence with many of the employees in the better garages.

In repair shops, the conditions are much worse. In one shop where we made inquiries as to how often and how many of the men go home with a headache, the answer was, "Nearly all of them nearly every day, but we try to arrange not to run tests and make much gas until nearly closing time." In an assembling plant where engines are tested before being placed on the chassis, we were asked to suggest some means of reducing the large amount of time which men lose from work on account of headache and nausea. This report contains our answer. In even the best arranged plants with which we are acquainted, no measures whatever are now employed to diminish the inhalation of the gases which are freely discharged into the air of the shop. In fact, this seems to be the universal condition in such shops, so far as we can learn.

What the ultimate effects of such frequent subacute asphyxiations may be is a problem on which there is not yet sufficient evidence to justify positive assertion. It appears possible that the nervous symptoms always associated with a carbon monoxid headache may lead ultimately to effects in some respects like those of chronic alcoholism, for partial asphyxia and alcoholic intoxication have many points of similarity. We have asked the opinion of several men who are of wide experience in industrial diseases, and have found that without exception they believe that an already existing tuberculosis is in many cases augmented and accelerated by such conditions. Indeed, rapidly fatal cases of this sort have come to our attention. We find also that the medical officers of insurance companies doing an "industrial" business are strongly of this opinion. Precise conclusions on the ultimate effects of frequent subacute inhalations of carbon monoxid lie, however, beyond the scope of this investigation.

Regarding the immediate effects of breathing air containing carbon monoxid in such amounts as are here under consideration, quite positive statements are justified by present knowledge. Thus, it is well ascertained that even a low concentration of carbon monoxid causes and intensifies the development of fatigue. This factor in industrial fatigue is quite certainly influencing many thousands of people in New York and other large and congested American cities daily.

The inhalation of such amounts of carbon monoxid, and the development of such ill effects as frequently occur in garages, are probably also factors in an appreciable number of street accidents and fatalities. The effects of alcohol in the weakening of judgment and in rendering inaccurate the nervous and muscular coordination of driving are well recognized, and the legal penalties for the partially intoxicated driver who has participated in an accident are severe. It is a well established fact that a man who has inhaled such amounts of carbon monoxid as occur in garages is affected by the same kind and degree of weakening of judgment and of accuracy of coordination as a man under the influence of a comparable amount of alcohol. Unlike the alcoholic, however, the driver who has an accident after being partially asphyxiated in a garage or repair shop might well plead his condition as an extenuating circumstance.

Regarding the rate of absorption and elimination of carbon monoxid and the immediate effects, full and accurate knowledge is now available. Our investigations in connection with the ventilation of the New York-New Jersey vehicular tunnel have shown that if only a moderate amount of carbon monoxid has been absorbed into the blood, practically all of it is thrown off within two or three hours in fresh air. But our observations, in accord with others, show also that the ill effects, especially headache, nausea and disturbances of temper and judgment, may last for many hours thereafter. Physiology and pathology have not yet arrived at a complete analysis of the problem of asphyxia. Enough is known, however, to justify the demand, from the standpoint of public health and industrial medicine, that, so far as possible, inhalation of exhaust gas should be prevented.

EFFECTIVENESS OF VERTICAL EXHAUST IN THE VENTILATION OF GARAGES

Through the courtesy of the General Baking Company of New Haven, we have been enabled to make the following highly significant observations: This company uses a number of one ton White trucks, most of them fitted with the vertical exhaust, but one having the ordinary horizontal exhaust. The observations

were made in a small garage which is 11 by 20 by 23 feet and is capable of holding three trucks. The following are typical protocols:

1. (*a*) A truck with the ordinary horizontal exhaust was run idle for five minutes in the closed garage. A sample of air taken 4 inches above the roof of the car was found to contain 7 parts of carbon monoxid; another sample taken 5 feet above the floor of the garage, and near the face of the observer, contained 7.3 parts of carbon monoxid.

1. (*b*) After the garage had been thoroughly aired, the truck previously used was removed and replaced by one having the vertical exhaust. The engine was run in the closed garage for five minutes. A sample of air 4 inches above the top of the car was found to contain 16.4 parts of carbon monoxid, while a sample taken 5 feet above the floor of the garage contained 4.2 parts of carbon monoxid.

2. (*a*) In the following experiments, a ventilator in the roof of the garage which had remained closed during the previous experiments was opened. The ventilator is simply a round hole in the roof 16 inches in diameter and with a galvanized iron pipe extending upward for 3 feet. It has a cover to keep out rain. When a car with the horizontal exhaust was run for ten minutes in the garage, a sample taken 4 inches above the roof of the car and a couple of feet below the ceiling of the garage contained 7.4 parts of carbon monoxid, while a sample taken 5 feet above the floor of the garage contained 9.2 parts of carbon monoxid.

2. (*b*) When the experiment was repeated with the vertical exhaust, it was found that when the exhaust was blown against the ceiling at a point 3 feet from the ventilator, the accumulation of exhaust gas in the garage after ten minutes was 3.5 parts of carbon monoxid in a sample taken on the roof of the car, and 2 parts in a sample taken 5 feet above the floor.

2. (*c*) In a similar experiment in which the vertical exhaust pipe was directly under the ventilator, the air in the garage was found after ten minutes to contain only 0.7 part of carbon monoxid at the roof of the car, and only 0.5 part 5 feet above the floor.

From these observations it is clear, in complete accord with a large number of observations which we have made on other garages, that the effect of the horizontal exhaust is to mix the gas almost immediately and completely with nearly the entire air of the garage. The problem of ventilation is thus rendered difficult; in fact, practically insoluble. On the other hand, with the verticle exhaust, natural ventilation by common appliances is sufficient to ventilate a garage effectively. The fire hazard is also reduced, as gasoline spilled on the floor cannot be ignited by the vertical exhaust.

Finally, it may be stated here that we have carefully investigated the other remedies which seem to occur spontaneously to nearly all ingenious minds inexperienced in this field—hose connections to the exhausts of cars in garages, gas mask canisters on the exhausts, and similar suggestions. Full study has shown, however, that for one reason or another in each case these remedies are not practicable. Discussion of them has therefore been omitted here.

CONCLUSIONS

The air in city streets where there is considerable traffic is found to be contaminated with automobile exhaust gas to a degree in excess of proper and well established health standards. The amount of visible smoke is not an index of carbon monoxid content.

The conditions in garages and repair shops are, as a rule, extremely unhealthful. Many mechanics and drivers suffer almost daily partial asphyxiation with headache and other sequelae. Fatal asphyxiations in private garages are fairly common occurrences in the winter.

The conditions in the streets of American cities can be largely ameliorated by the use of the vertical exhaust on omnibuses, trucks, taxicabs, and private cars with tops. Cars without tops are now negligible in numbers in cities.

The horizontal exhaust now generally used mixes the gas throughout the respiratory zone of street air in a layer only about 10 feet deep. It thus dissipates the heat of the gas and prevents it from rising out of the street. The vertical exhaust, on the contrary, starts the hot gas upward with comparatively little admixture of air, and its heat carries it on up out of the street.

With the horizontal exhaust the entire air of the garage is rapidly mixed with exhaust gas. Adequate ventilation of garages is at present virtually not feasible. With the vertical exhaust, the heat of the gas holds it against the ceiling with comparatively little admixture of air, and the gas therefore readily finds its way out through any ventilator in the roof.

Clinical Notes, Suggestions, and New Instruments

SOME FURTHER OBSERVATIONS ON THE ELECTRIC BREAST PUMP*

ISAAC A. ABT, M.D., CHICAGO

For several years it has been my desire to construct a motor-driven milking machine which would be more efficient than the pumps that are offered for sale. Two years ago I exhibited the first model at a meeting of the American Pediatric Society. Since that time, many improvements and modifications have been made in the original model, and numerous clinical tests have been conducted. The new apparatus is much smaller, less complicated, and readily portable.

DESCRIPTION

Suction is obtained by an electrically driven, reciprocating pump with the aid of a vacuum chamber, combined with a special glass nipple shield (Fig. 1). The suction produced is not continuous, but alternates with expulsion. The degree of suction is registered by a gage which may be readily regulated to suit the convenience of the patient by a relief valve at the top of the pump. The vacuum may be increased by turning the relief valve to the right, and decreased by turning the valve to the left. There is a rubber tip attached to the bottom of the vacuum chamber. A longitudinal slit in this tip permits the expulsion of the milk from the chamber into the receptacle.

Vacuum is produced at every suction stroke of the pump, at which time this slit becomes closed, thus permitting the extraction of the milk from the breast into the glass chamber. With the downward, or compression stroke of the plunger, the expulsion of the milk, as already mentioned, is accomplished through the rubber tip. The machine produces approximately forty-five sucks each minute. Experiments have been performed which demonstrate that this rate gives the best results.

The glass chamber and nipple shield are attached to the pump by means of a rubber tube which is sufficiently firm to prevent collapse of the tube. The entire procedure may be carried out under strict asepsis, so that milk passes from the breast through the glass chamber into the desired receptacle without any possibility of contamination by the fingers or hands. The glass chamber and shield, as well as the tube and rubber tip, may be easily sterilized in the usual manner. The machine needs no attention except occasional oiling.

TECHNIC OF APPLYING PUMP

The usual method of cleansing the breast with boric acid solution is employed. The glass nipple shield has been so

* Read before the American Pediatric Society, May 31, 1923.

constructed that the circumference reaches beyond the areolae when the nipple is drawn into the shield. The tip of the nipple should be in a line directly in the center of this opening; otherwise unequal suction is produced, resulting in a shutting off of the milk ducts over a certain sector. When the nipple is directly in the center of the shield, it is observed that the milk flows freely in many fine streams. This milk is collected into the vacuum chamber as already described (Fig. 2). The chamber, rubber tip and rubber tubing should be sterilized before using. Milk may be collected in a sterile bottle.

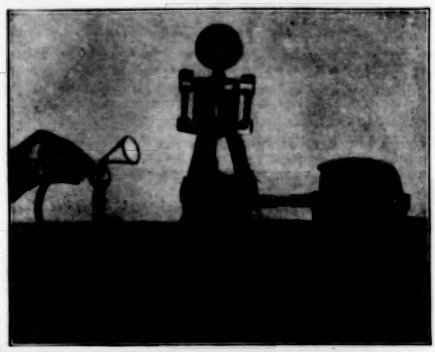


Fig. 1.—Electric breast pump.

Although the pump will express the milk without any further aid, the quantity of milk obtained is always greater when gentle compression of the base of the breast is made. This seems to aid the vacuum, and facilitates a more complete emptying. The base of the entire breast need not be compressed at one time. Good results are obtained by compressing one sector of the breast at a time. The breast may be emptied by the pump in about ten or twelve minutes, and occasionally an added quantity may be obtained by using the pump for fifteen minutes. In some cases, a period of five minutes was sufficient to empty each breast.

When using the machine on a patient for the first time, there is occasionally a delay in the free flow of the breast milk. When the patient has been convinced that the machine is harmless, this retardation of the milk flow is overcome. For this reason, it is best in all cases to demonstrate to the patient the action of the pump by applying the shield to the palm of the hand or the cheek. The amount of pressure in all cases should be low for the first few strokes, and it is best to increase the pressure according to the patient's comfort. Experiments have shown that the best results are obtained with a pressure of from 6 to 8 inches, as indicated by the pressure dial.

ADVANTAGES

The advantages of this breast pump are:

1. The method of expression is aseptic.
2. The secretion of milk is stimulated.
3. Engorged breasts are relieved more readily and more effectively than by manual expression or with the hand pump.
4. The electric pump is beneficial in cases of inverted nipples.
5. No cases of breast abscess or other breast infections resulted in our series.
6. It has been used in a few cases of fissures of the nipple. No pain has occurred, and the fissures healed during the period in which the pump was used.

CLINICAL EXPERIENCES

The pump has been used in procuring a milk supply from the wetnurses at the Sarah Morris Children's Hospital for nearly two years. Prior to the use of the pump, the wetnurses at the hospital expressed their milk by the manual method. On some occasions on which this method has been employed and the breasts were apparently emptied, a considerable amount of milk could be obtained with the electric pump. On the other hand, if the breast is emptied by the electric pump, little or no milk can be obtained by manual expression.

The results obtained by a long series of tests at the Chicago Lying-In Hospital may be thus summarized:

1. In those instances in which adequate secretion of milk was unduly delayed, the use of the pump produced sufficient stimulation to cause an unhampered flow of milk. In the case of newly born babies, the pump was applied to each breast from three to five times daily after nursing. These infants remained under observation, and the flow of milk continued to be sufficient to provide for weight increase after they had reached their homes.

2. The machine was very useful in relieving engorged and painful breasts, in which cases the pressure was reduced so that the vacuum gage registered from 2 to 4 inches instead of the usual 6 to 8 inches.

3. The nurses at the Chicago Lying-In Hospital formerly expressed the breast milk by hand in order to obtain food for the premature babies and those who received an insufficient supply of milk. If the milk must be expressed in a number of mothers, the nurse's hand becomes fatigued and poor results are obtained. The nurses have frequently expressed the opinion that the pump affords them a more efficient method of obtaining milk, less time and labor are consumed, and a greater quantity of milk is obtained. They feel that the machine is almost indispensable. The mothers soon become accustomed to the pump. They suffer no pain, and are pleased with the results. One of the supervising nurses observed that the nipples became softer and could be more readily grasped by the infant.

4. Only a few cases of inverted nipples presented themselves for observation. In these cases, a smaller nipple shield is used at the outset. This small shield pulls out the inverted nipple very readily. After several strokes, the nipple stands out prominently, and the milk flows readily as though the nipple had not been inverted. In some cases, the nipple was drawn out and remained so permanently, although in a few cases, this did not result.

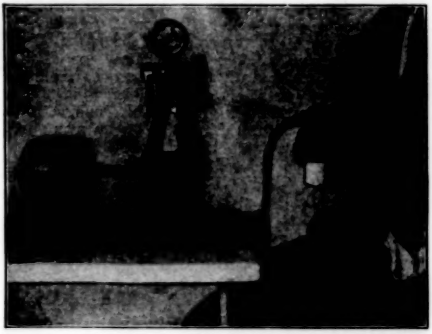


Fig. 2.—Pump in use.

CONCLUSION

It may be said that the electric pump produces an intermittent form of suction without causing pain or injury to the breast. It stimulates the breast and increases the quantity of milk. It has been tested in a considerable number of cases, and has given more satisfactory results than any artificial method of expression previously employed.[1]

104 South Michigan Avenue.

1. For the present, the machine is being constructed under the direction of Mr. Edward Lasker, Room 900, Wrigley Building, Chicago.

INSTRUMENT TO FACILITATE MAKING OF SUTURE HOLES IN CERTAIN BONES

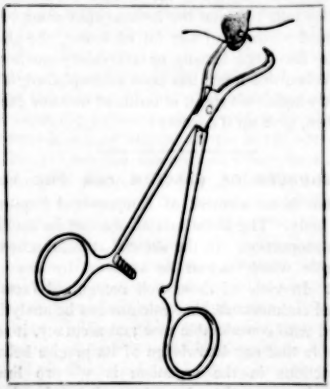
PHILIP LEWIN, M.D., CHICAGO

This simple instrument for making suture holes in certain bones is especially useful in operations on the patella and the bones of the foot and wrist. It is very handy in all tendon and bone work, particularly in arthrodeses of small bones.

The instrument is not proposed as a substitute for the hand or electric drill. Often the latter instruments are not sterilized and at hand, and delays are always annoying.

The instrument is a modified "June bug" or Backhaus clamp (sometimes called a "towel clip"). Any variety of size, curve and thickness of prongs may be made. It may be used without eyes simply to make the holes, or with eyes, to be used for inserting the sutures after the holes are made. If used without eyes, the suture needles should have the same curve as the hole-making prongs. If the desired shape of prongs cannot be obtained, it is very simple for a good instrument maker to cut off the blades of a pair of Ochsner forceps and braze new prongs on the ends.

By forcing both prongs through the bone, locking the forceps and working the prongs forward and backward once



Instrument for making suture holes in small bones: prong through bone, with suture material in eye of prong.

or twice, a very smooth hole is made. Suture material going through this hole is not cut or frayed by spicules of bone. The hole is not large, and a needle with proper curve will follow the track very easily. If the instrument has an eye in each prong, after the hole is made, the forceps are unlocked and one prong is forced through until the eye is exposed. The end of the suture is threaded, the prong extracted, and the suture is in the bone.

7 West Madison Street.

Devitalizing Influence of Heat or Cold When Too Long Applied.—DR. E. C. ROBICHAUX, Excelsior Springs, Mo., writes: I report this case to call attention to the devitalizing influence of heat or cold when too long applied: E. F. H., a man, who consulted me, April 3, 1923, ten days previously had had a severe attack of pain in the region of the gallbladder. For twenty-four hours he continuously applied heat over the area of a cholecystectomy performed eleven years before. Immediately after the heat was removed, an ice-bag was applied without intermission for thirty-six hours. At the first examination, seven days later, no local lesions had appeared, nor was more than slight tenderness elicited. Two days later, intense hyperemia, attended with much pain, developed in and around the scars. Later, blistering occurred, followed by considerable exudation of serum and some sloughing.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, SECRETARY.

Protein Mixtures for Diagnosis

"Protein mixtures for diagnosis" are mixtures of two or more pollen, epidermal or food protein preparations.

Actions and Uses.—See Pollen and Epidermal Extracts and Biologically Reactive Food Proteins, New and Nonofficial Remedies, 1923, p. 234. In order that the number of skin tests to determine sensitiveness to proteins may be reduced, it has been proposed to employ mixtures of protein preparations, and if sensitiveness to a given mixture is found, then to make tests with the individual proteins contained in this mixture. There is the objection to this procedure that with patients who react very slightly to one member of a mixture, the dilution which has occurred on account of the presence of other proteins may render a reaction negative. On the other hand, if a patient is highly sensitive to all the proteins of a mixture, cutaneous reactions may give rise to systemic disturbances.

Dosage.—See Pollen and Epidermal Extracts and Biologically Reactive Food Proteins, New and Nonofficial Remedies, 1923, p. 234.

These protein mixtures are used for diagnostic purposes only.

GROUP ALLERGENS DIAGNOSTIC-SQUIBB.—A mixture of two or more Allergens-Squibb in equal proportions.

Actions and Uses.—See preceding description Protein Mixtures for Diagnosis.

Dosage.—See preceding description Protein Mixtures for Diagnosis.

Group Allergens Diagnostic-Squibb are marketed in vials containing 25 milligrams.

Manufactured by E. R. Squibb & Sons, New York. No U. S. patent or trademark.

Group Allergens-Squibb Type I (Beet, Carrot, Parsnip, Radish, Turnip); Group Allergens-Squibb Type II (Cabbage, Celery, Lettuce, Onion, Spinach); Group Allergens-Squibb Type III (Artichoke, Asparagus, Cauliflower, Rhubarb, String Bean); Group Allergens-Squibb Type IV (Cucumber, Egg Plant, Pumpkin, Squash, Tomato); Group Allergens-Squibb Type VI (Apricot, Cherry, Peach, Plum, Prune); Group Allergens-Squibb Type VII (Cantaloupe, Grape Fruit, Lemon, Orange, Watermelon); Group Allergens-Squibb Type VIII (Apple, Banana, Pear, Pineapple, Fig); Group Allergens-Squibb Type IX (Almond, Chestnut, Filbert, Hazel Nut, Peanut); Group Allergens-Squibb Type X (Black Walnut, Brazil Nut, English Walnut, Hickory Nut, Pecan); Group Allergens-Squibb Type XI (Barley, Buckwheat, Corn, Oats, Rice); Group Allergens-Squibb Type XII (Beef, Goat, Horse, Pork, Mutton); Group Allergens-Squibb Type XIII (Chicken, Duck, Goose, Guinea-Hen Turkey); Group Allergens-Squibb Type XV (Blue Fish, Codfish, Haddock, Halibut, Mackerel); Group Allergens-Squibb Type XVI (Butterfish, Salmon, Sea Bass, Sole, Whiting); Group Allergens-Squibb Type XVII (Clam, Oyster, Crab, Lobster, Scallops, Shrimp); Group Allergens-Squibb Type XVIII (Black Pepper, Ginger, Mustard, Paprika, Vanilla); Group Allergens-Squibb Type XIX (Cocoa, Coffee Bean); Group Allergens-Squibb Type XX (Egg [all proteins], Cow's Milk [all proteins], Goat's Milk [all proteins]); Group Allergens-Squibb Type XXI (Cat [hair], Cow [hair], Dog [hair], Horse [dander], Rabbit [hair]); Group Allergens-Squibb Type XXII (Chicken, Duck, Goose); Group Allergens-Squibb Type XXVI (Micrococcus Catarrhalis, Pneumococcus I, Pneumococcus II, Pneumococcus III, Pneumococcus IV); Group Allergens-Squibb Type XXVII (Staphylococcus Aureus, Staphylococcus Albus, Staphylococcus Citreus, Streptococcus Pyogenes, Streptococcus Viridans).

POLLEN ANTIGENS-LEDERLE (See New and Nonofficial Remedies, 1923, p. 239).

The following products have been accepted:

Annual Salt Bush Pollen Antigen-Lederle; Bermuda Grass Pollen Antigen-Lederle; Cocklebur Pollen Antigen-Lederle; Johnson Grass Pollen Antigen-Lederle; Mountain Cedar Pollen Antigen-Lederle; Mugwort Pollen Antigen-Lederle; Oak Pollen Antigen-Lederle; Orchard Grass Pollen Antigen-Lederle; Perrenial Rye Grass Pollen Antigen-Lederle; Rabbit Bush Pollen Antigen-Lederle; Redroot Pigweed Pollen Antigen-Lederle; Russian Thistle Pollen Antigen-Lederle; Spiny Amaranth Pollen Antigen-Lederle; Yellow Dock Pollen Antigen-Lederle.

Prepared by the method given for Pollen Antigens-Lederle (New and Nonofficial Remedies, 1923, page 240).

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SATURDAY, AUGUST 4, 1923

THE TRIUMPH OF THE CALORY

For three or four years there has been considerable discussion among pediatricians, some of it in the columns of THE JOURNAL,[1] regarding the system of feeding that was formulated during the World War by the Viennese clinician Pirquet. Impelled by an ardent desire to simplify the technic of practical nutrition so as to render the scientific measurement of food more popular, he introduced a new unit of food value, the nem, in place of the calory. This occurred in Europe at a time when the efforts of the United States Food Administration and other educational influences in this country were encouraging a larger interest in the quantitative aspects of the food supply, and consequently in the significance of calories in every-day life. The nem represents the food value of 1 c.c. of cow's milk. A simple calculation, based on a content of 667 calories per liter of milk, indicates that a nem equals two thirds of a calory; a calory is equivalent to 1½ nems.

As calories refer primarily to heat production and combustion, whereas the nem has reference to a universally known food, Pirquet believed that the latter would have a greater "advantage of visualization" and therefore appeal better to the popular imagination. Faber [2] has recently argued, with much justice, that the introduction of Pirquet's food unit, the nem, to supplant the calory is highly undesirable, largely for practical reasons, and presents no advantages that would appeal to an American public. As he points out, the calory is now generally understood and commonly used in practice by the profession in this country. We have learned what it means to "eat by calories." Physicians, nurses and dietitians think of diet in terms of calories; and, as Faber adds, the same may be said of thousands of lay people who are attempting to rid themselves of superfluous flesh by "counting their calories." One can readily "visualize" the fuel values of food as ounces of milk by dividing their calory value by 20.

After all, a unit in any field of measurement, whether of food, fuel or electricity, has little meaning in a practical way unless it is associated with something concrete. Most persons can visualize 10 pounds of flour or sugar because of first-hand experience with it. The same measure—10 pounds—conveys only a vague impression if it is referred to feathers or leather or pearls, which one has not been accustomed to weigh and evaluate in terms of pounds. Familiar though the pound and quart may seem to be to Americans, they are finding it necessary to relearn what purchases may mean when pounds begin to replace quarts in the food market of today. So it is with calories and nems, with grains and grams. They mean little until we learn to associate them with something concrete—with butter, eggs, milk and bread, for example, in definite portions. The student of nutrition and the layman alike must become accustomed to think of the fat of butter, the slice of bread or the large banana as 100-calory portions of food. When this much has been accomplished, it matters little whether we speak in terms of nems or calories. Why, then, give up the calory?

1. Carter, W. E.: The Pirquet System of Nutrition and Its Applicability to American Conditions, J. A. M. A. 77: 1541 (Nov. 12) 1921. Correspondence, ibid. 77: 1756 (Nov. 26), 1837 (Dec. 3), 1911 (Dec. 10), 1988 (Dec. 17), 2080 (Dec. 24) 1921.

2. Faber, H. K.: A Critique of the Pirquet Feeding System, with Special Reference to Its Underlying Principles, Am. J. Dis. Child. 25: 339 (May) 1923.

THE SOURCES OF CALCIUM FOR THE BODY

Calcium is an element of fundamental importance for the body. The blood and all the tissues contain it in some proportion. In the skeletal structures it has a major rôle which cannot be assumed by any other element. In view of these well recognized facts and the added circumstance that calcium can be analytically estimated with considerable ease and accuracy, it seems remarkable that our knowledge of its precise behavior and functions in the organism is still so limited. Recently, however, there have been signs of a decided renaissance of interest in the subject. It has been found, for example, that the presence of calcium compounds in the diet is not, of itself, a sufficient guarantee that the element will be "assimilated." Recent studies of rickets, in particular, have indicated that a variety of factors may be involved in the satisfactory "deposition" of calcium in the bones. Again, the data assiduously accumulated through the methods of blood microchemistry show that the circulating medium of the body is normally endowed with a fairly constant content of calcium; and, when this becomes perceptibly lowered, pronounced pathologic conditions are likely to be found. The relation of cause and effect in such conditions, however, is by no means clearly elucidated. Calcium is exceptionally prone to form salts that are quite insoluble, particularly in neutral or alkaline mediums. In this way it is always conceivable that calcium may be "lost" to the body in a functional sense by precipitation in some inert form, such as phosphate, sulphate, oxalate or soaps, as well as by actual deficiency in some respect. Added to these varied circumstances,

which give a sort of uniqueness to it among the other physiologically important inorganic elements, is the fact that calcium has a somewhat unusual path of elimination from the body. It is excreted as well as absorbed by the bowel.

Many of the present-day dietary components of man, as well as the domestic animals, are wofully deficient in calcium. In view of this, attention has naturally been directed to its relative availability from different sources. Milk remains *facile princeps* as a calcium-bearing food; but milk is also rich in fats which are potential sources of insoluble calcium soaps in the intestine. A study of the current textbooks gives the impression that the formation of calcium soaps and a resultant failure of absorption are sometimes causes of the loss of both fats and calcium which may be needed by the body. The observation of "soap curds" in the stools of infants has played a part in diagnosis in the realm of pediatrics. A recent writer has reminded us that it is easy to understand why, in the earlier literature, the idea gained credence that calcium salts insoluble in water or dilute alkali were unavailable, because the content of the small intestine a short distance from the pylorus was believed to be alkaline in reaction. It is now known, thanks to the observations of various American biochemists,[1] that the acidity of the chyme is neutralized only gradually, so that an acid reaction often prevails for a considerable length of the small intestine and even sometimes throughout its entire length. Evidently, this suffices under ordinary circumstances to guarantee adequate solubility of calcium from even the most insoluble compounds so that it can be utilized, provided the diet is adequate in its content of "fat soluble" vitamin. At any rate, the Department of Agricultural Chemistry at the University of Wisconsin has found that, in young animals, there was no difference in the availability of calcium lactate, carbonate, phosphate, silicate or even sulphate when these were fed in liberal amounts as sole sources of calcium for the growing organism.[2] The investigators who determined these facts believe it is undoubtedly the acidity that makes possible the assimilation of the difficultly soluble calcium salts from the intestine. In this connection we are reminded that such salts as barium sulphate, insoluble in dilute hydrochloric acid, are not absorbed to any appreciable degree; at least not sufficiently to cause toxic symptoms.

If, then, despite the presence of an abundant source of calcium the "balance" of the latter is often unfavorable, we must look to other factors than solubility to explain the difficulty. Such a one, there is reason to believe, is of a vitamin nature, possibly identical with vitamin A or the antirachitic vitamin. Green plants and cod liver oil are already known to contain factors influencing calcium assimilation; and there is evidence that these potencies may deteriorate under unfavorable conditions of storage or exposure. Bearing in mind that calcium is both absorbed and excreted through the intestine, it is not impossible that the effective vitamin acts to modify in some way the "permeability" of the intestine in one direction or another for salts of the element. In any event, it seems desirable to keep in mind not only the tissue aspects but also the intestinal possibilities in the problem of calcium utilization by the organism.

1. Long, J. H., and Fenger, F.: J. Am. Chem. Soc. **39**: 1278, 1917. McClendon, J. F.; Culligan, L. C.; Gydesen, C. S., and Myers, P. J.: J. Biol. Chem. **41**: 6, 1920.
2. Steenbock, H.; Hart, E. B.; Sell, M. T., and Jones, J. H.: The Availability of Calcium Salts, J. Biol. **56**: 375 (June) 1923.

THE FUNCTION OF THE CORPUS STRIATUM

There was a time, during the last quarter of the last century, when the localization of cerebral functions on a strictly scientific basis seemed to be near at hand. The possibility of such an accomplishment meant much to clinical medicine as well as to neurologic physiology. With the improvement of surgical technic and the decreasing hazards of operative procedure, greater certainty of diagnosis was called for in connection with pathologic changes in the central nervous system, and particularly the brain; but progress in the acquisition of knowledge regarding the physiology of this organ has been disappointingly slow. It has not been easy to identify specific lesions with special activities of the body. Contradiction and confusion has characterized much of the experimental as well as the clinicopathologic evidence.

The reasons for some of this current uncertainty are not hard to find. Even for the skilled operator, experimentation on the encephalon is admittedly difficult. It is not easy to acquire precision in attempting to produce lesions in well defined areas, and usually they cannot be located satisfactorily except postmortem. Attempts at extirpation of some part involve the concurrent danger of injury to adjacent parts, as well as disturbances in the circulation of structures somewhat remote from the one under consideration. The harm is not always localized, as it was intended to be by the investigator. Furthermore, it has often become questionable whether compensatory functions do not readily develop to obscure the actual damage.

These considerations may help to explain why so little is known in any definite way about the exact functional rôle of the group of nerve cells comprising the corpus striatum. Despite the attempts to destroy definite portions of this structure with chemicals and thus to observe possible symptoms of a lack of part of the striate body, despite efforts to secure positive responses by electrical stimulation of selected portions of the latter, little of importance has been learned. The conjectures of a motor-steadying function of the corpus striatum have not been sustained; and even strong electric stimuli have failed to elicit indications of unmistakable motor control through this region.

Evidence obtained by the clinicopathologic method, by observations of symptoms associated with known

pathologic lesions of the nervous system in man, is usually open to the criticism that the pathologic process noted may have been modified by other disturbances of a common origin. This objection does not apply, however, to an ingenious method recently employed by Edwards and Bagg [1] of Cornell University Medical College in the study of neurophysiology. It consists in producing localized lesions in animals by burying, in the nervous structures, small tubes of radium emanation. The outstanding advantages consist in the absence of extensive trauma, and the sterility of the procedure adopted. Lesions so produced were sharply localized, necrotic in character, and showed accompanying phagocytic and edematous processes. The surrounding brain tissue was found to be normal, and some of the larger vascular trunks at the borders of the irradiated fields remained patent. The destruction of large portions of the lenticular and caudate nuclei did not give rise to outstanding defects in the coordinated activities of walking and jumping, even in experiments involving observations over many weeks. Some animals exhibited temporarily signs of dysphagia, dysarthria, conjunctivitis, clumsiness in slow movements, tremor and hypertonia; but all indications of disturbance usually disappeared within a short period. There was no tract degeneration in the spinal cord. In man, hypertrophic cirrhosis of the liver has been associated with progressive lenticular degeneration. In Edwards and Bagg's dogs, structural changes were not observed in the liver or other organs. Although extensive bilateral lesions of the striate body were occasionally attended by tremors and signs of hypertonia exhibited in an unusual bodily posture, there was subsequently return to a normal—or apparently normal—condition. It may seem disheartening to be obliged to record so much of a negative character where something significant has long been awaited; nevertheless, it usually leads to real progress to eliminate the fabric of unwarranted beliefs.

1. Edwards, D. J., and Bagg, H. J.: Lesions of the Corpus Striatum by Radium Emanation and the Accompanying Structural and Functional Changes, Am. J. Physiol. 65: 162 (June) 1923.

Current Comment

BLOOD CELL VOLUME

In considerations of the red cells of the blood, attention has long been directed to their abundance, that is, the number of the erythrocytes present in a unit of the circulating medium. Presently it was noted that the content of hemoglobin in the individual corpuscles may vary to some extent independently of their number; so that, without any change in the latter, the amount of oxygen-carrying blood pigment may be either larger or smaller than usual. In such cases it has been customary to state that the "color index" of the blood has been modified. Conditions are now recognized in which, despite a normal blood cell count, the color index is lowered. From the standpoint of the respiratory functions of the blood, the efficiency of the erythrocytes must then be impaired. Obviously the corpuscles can vary also with respect to structure and volume. Under certain circumstances, nucleated red cells make their appearance. Twenty years ago, Capps [1] emphasized the value of the study of their size also. Although he determined what he designated as the "volume index" in different types of anemias, the subject practically suffered oblivion until it was again brought to notice by Haden [2] at the University of Kansas School of Medicine. His results emphasize in a striking way the great constancy of the volume and hemoglobin content of the normal erythrocytes. Apparently they are "saturated" when the pigment attains a concentration of 34 per cent. in them. Haden believes that a study of the volume of the red cells is of the greatest value in the differential diagnosis of the anemias. Thus, in pernicious anemia the practically constant and the most characteristic blood finding is considered by him to be the large volume of the average red cell. The increase here is greater than the increase in hemoglobin. Supersaturation of the cells with the pigment never occurs. As contrasted with primary anemia, the secondary anemias show an average cell volume never greater than normal, and seldom as large. The color index is correspondingly smaller. Haden believes that the smaller size of the cell in hemorrhagic anemia is probably the direct result and an expression of the long continued drain on the bone marrow. This circumstance may be of definite prognostic value. Let us therefore learn more about red blood cell volume.

1. Capps, J. A.: J. M. Res. 5: 367, 1903.
2. Haden, R. L.: Accurate Criteria for Differentiating Anemias, Arch. Int. Med. 31: 766 (May) 1923.

THE REWARD OF GENIUS

The Canadian government has awarded Dr. F. G. Banting a life annuity of $7,500 as the discoverer of insulin. In commenting on the award, the New York *Times* points out that professional ethics prevents Dr. Banting from exploiting the commercial possibilities of the remedy and that fame will not pay grocers' bills. "The amount suggested as his honorarium seems large only because such appropriations of public funds are so rare. After all, it is only the interest on $150,000, and compared with the fortunes made by other inventors—the Fords, the Edisons, the McCormicks and their like—it seems absurdly small." The *Times* urges that the action taken by Canada be an example to the rest of the world. "National governments have a duty in this matter, and one which they rarely have recognized. For the most part they have left the maintenance of scientific research to the generosity of individuals or of the few private corporations which have arrived at a realization of what 'pure science' can do for them. . . . A government, if conducted with sufficient intelligence, would change all this. It would establish facilities for determining just what men had rendered or were likely to render services so widely beneficial that everybody should be expected to pay for them. Then it should make due provision for acquiring a

discovery or invention of general benefit and offering it freely to anybody in the country, or in the world, who wants to use it." In a recent address before the British Science Guild, Sir Ronald Ross, noted for his discoveries in relation to the control of malaria, also drew attention to the neglect accorded scientists in his country and the United States:

> One of the worst cases was that of W. M. W. Haffkine, who in 1896 discovered the inoculation treatment to cure cholera and plague in India. Not being a medical man, Mr. Haffkine could have patented his discovery and made a fortune. But he set to work to manufacture millions of tubes of this vaccine, and thereby saved millions of lives. An accident occurred, and although he was not responsible, he was made the scapegoat by the authorities in India. He was hounded out of the country, and came home, so to speak, fettered with the chains of Columbus about his feet. He was treated vilely—and he was one of the greatest benefactors of the last century. . . . Walter Reed the American, who discovered that yellow fever was carried by the mosquito, was given some menial employment, feeling pulses, administering castor oil, and looking at dirty tongues for a couple of years. And he was allowed to die apprehensive as to how his wife and family could sustain life.

Sir Ronald advised that there should be some state compensation for the research worker who contributes his work for the benefit of all mankind. It is encouraging to find this development of a sound public opinion in favor of properly rewarding scientists. Discoveries such as that of insulin are not made every day or even every decade. The watchdogs of the public treasury need fear no great drain on the public purse from such awards; and, even if there were a drain, the saving in lives and in the cost of disease would more than compensate for the sums expended.

PROGRESS WITH INSULIN

One of the most important problems that confronted the investigators of insulin was its preparation on a commercial scale. The problem was twofold. It concerned, first, the extraction of a nontoxic product from the pancreas and, secondly, the securing of sufficient raw material to afford an adequate amount of insulin for the needs of the diabetic public. As will be remembered, Dr. J. B. Collip, working with others at the University of Toronto, was able to devise a method of extraction which permitted manufacture on a large scale. In a paper recently published, Dr. Collip has carried his results still further. At the same time that Winter and Smith published their results, he was able to show that an insulin-like substance could be obtained from commercial yeast; and Collip, Winter and Smith and Thalhimer suggested that a similar substance might be obtained from plants. In his recently published work, Collip has shown that a substance may be obtained from lettuce, onion tops and similar substances which has the effect of lowering the amount of sugar in the blood when injected into animals. This substance has been called "glucokinin." In this issue of THE JOURNAL appears a statement by Drs. Best and Scott[1] of the University of Toronto which indicates that such a substance may be obtained from practically every tissue in the animal body. The thymus, submaxillary gland, spleen, liver, thyroid and muscle have all yielded the substance; in fact, the extract prepared from the thymus and submaxillary gland tissue exceeded that formerly obtained from the pancreas in the number of units of insulin yielded. In this issue appears also a therapeutic suggestion by Dr. William Thalhimer[2] which is an indication of the broadening of the field of knowledge brought about through the insulin discovery. Whereas the fundamental nature of the condition known as ketosis is not generally understood, most investigators are agreed that this condition occurs in diabetes when the metabolism of the body is unable to utilize carbohydrate, or when an insufficient amount of carbohydrate is given. It has been known empirically, moreover, that if carbohydrate is administered in various types of acidosis, the condition will gradually disappear. With these facts in mind, Dr. Thalhimer administered carbohydrate to patients suffering from ketosis, and no improvement followed. He then gave carbohydrate to the same patients and injected insulin simultaneously in order to cause rapid utilization of the glucose injected. As Dr. Thalhimer points out, investigations are desirable to indicate whether or not there is a diminished glycolytic power of the blood after anesthesia and after operation; if it can be shown that such is the case, the rationale of treatment of such conditions with glucose and insulin will be firmly established.

1. Best, C. H., and Scott, D. A.: Insulin in Tissues Other Than the Pancreas, J. A. M. A., this issue, p. 382.

2. Thalhimer, William: Insulin Treatment of Postoperative (Nondiabetic) Acidosis, J. A. M. A., this issue, p. 383.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Hospital News.—The Arizona Deaconess Hospital, Phoenix, was dedicated, June 24. The new institution, which is modern in every respect, represents an investment for buildings, grounds and furnishings of $350,000. Its bed capacity is 105.

CALIFORNIA

Physician Not Guilty.—Dr. Louis L. Jacobs, who was tried at San Diego for the murder of Fritzie Mann, was found not guilty, July 21, it is reported. The jury was composed of eight men and four women.

Physicians' Licenses Restored.—A letter from the California State Board of Medical Examiners states that the license of Dr. Elias P. Case, Oakland, which was suspended, June 28, 1922, for a period of one year, has been restored. It was also stated that the license of Dr. Alfred S. Sander, San Diego, which was revoked, March 20, 1919, has been restored.

Personal.—Dr. and Mrs. Frank Hinman, San Francisco, sailed, July 20, for Australia and the South Sea Islands.—— Major Gordon G. Snow, U. S. Army, retired, has become pathologist to the Hollywood Medical Group, Hollywood, it is reported.——Dr. Francis J. McCarthy, San Francisco, has been appointed temporary medical examiner of the sanity commission, to succeed the late Dr. Daniel D. Lustig.

Lack of Funds Handicaps Health Work.—Dr. Walter M. Dickie, secretary of the state board of health, announced, it is reported, that the reduction in the budget for health work will abolish the fund used in epidemic emergencies which amounted to more than $40,000 as authorized two years ago for the control of typhoid fever, diphtheria, smallpox, yellow

fever and influenza. The reduced budget also prevents, he said, the state from paying $750 a month to assist the U. S. Public Health Service at San Francisco in controlling bubonic plague, and provides nothing for the prevention and control of malaria, which disease was much reduced in the state by the appropriation of $20,000 voted by the 1921 legislature.

DELAWARE

Personal.—Dr. William T. Chipman, Harrington, has been elected president of the Chamber of Commerce of that city. ——Dr. James Martin, Magnolia, has been appointed by the governor a member of the state department of supplies.——Dr. George W. K. Forrest has been elected mayor of Wilmington.

GEORGIA

Society Reorganized.—The Wilkes County Medical Society was reorganized at a meeting held recently at Washington. Dr. Lewis R. Casteel, Metasville, was elected president; Dr. Charles E. Wills, Washington, vice president; Dr. Addison W. Simpson, Washington, secretary-treasurer. The new Washington Hospital, the construction of which has started, has stimulated interest in society affairs.

Child Health Demonstration Wanted.—Seven counties of Georgia want the health demonstration which the American Child Health Association will establish and support for five years somewhere in the South: Cobb, Decatur, Baldwin, Washington, Telfair, Clark and Wilkes. Representatives of the association will soon visit these counties. It is said that a total of thirty-three communities are seeking the southern unit, which will comprise a mothers' clinic, a baby clinic, a training school for mothers and an educational campaign for better babies.

Personal.—Dr. Henry L. Akridge, Mitchell County, has been appointed county health officer for Glynn County.——Dr. A. Richard Bliss, Jr., professor of pharmacology, Emory University School of Medicine, Atlanta, has resigned to accept the professorship of physiology and pharmacology at the University of Tennessee.——Dr. William H. Goodrich, Augusta, has been elected dean of the University of Georgia School of Medicine to succeed the late Dr. William H. Doughty, Jr.——Robert F. Maddox, Atlanta, president of the Atlanta National Bank, has been elected president of the state board of health to succeed the late Dr. William H. Doughty, Jr.——Dr. Victor H. Bassett, for many years pathologist in the health department of Savannah, has been elected health officer of that city.

ILLINOIS

Smallpox at Walnut Grove.—Ten cases of smallpox were recently reported in Walnut Grove Township, it is reported. An officer of the state department of health confirmed the diagnosis and established a quarantine.

Coroner's Jury Holds Physician.—Dr. Brice H. Elder, Peoria, was arrested, July 21, charged with the murder of Mrs. Helen Billings as the result of an illegal operation, it is reported. A coroner's jury, it is said, recommended that the accused be held without bail. Dr. Elder was brought before a coroner's jury on a similar charge, it appears, some years ago, but the case never came to trial.

Personal.—Dr. William Schoenneshofer, Streator, has been appointed a member of the board of the LaSalle County Tuberculosis Sanitarium to serve for three years.——Dr. James P. Johnston has been appointed health commissioner of East Moline, to succeed Dr. Henry J. Love, who was recently drowned in the Mississippi river.——Dr. Jacob Milton Furstman, Peoria, has been reappointed health director of the Peoria public schools.——Dr. Ralph McReynolds has been elected president of the Blessing Hospital, Quincy.

Health Educational Campaign.—The state department of public health has arranged an educational campaign which will cover all county fairs of importance and all the larger fairs in the state which are held during the next three months. There will be five field units equipped with motor transportation, motion picture projectors and other equipment for conducting demonstrations and exhibits. Each unit will be housed in a tent. The program at each point will embrace motion picture shows, a poster display, the distribution of special literature and superficial physical examinations for adults. A large number of well baby conferences will also be conducted.

Chicago

Society News.—At the annual meeting of the Chicago Urological Society the following officers were elected: Dr. Joseph S. Eisenstaedt, president; Dr. Harry B. Culver, vice president, and Dr. Thomas F. Finegan, secretary-treasurer.

Norman Bridge Pathological Laboratories.—Mrs. Norman Bridge, wife of Dr. Norman Bridge, professor emeritus, Rush Medical College, has subscribed $100,000 to the fund for the Rawson Memorial Laboratory to be built on the west side. The fund donated by Mrs. Bridge will provide the Norman Bridge Pathological Laboratories which will occupy the fifth floor of the Rawson Memorial Laboratory.

Birth Control Clinic Opposed.—A parents' clinic for the purpose of giving information concerning birth control has been refused a license by Health Commissioner Bundesen, it is reported. Birth control advocates claim, it is said, that there is no law that will prevent holding the clinic and that the consent of sufficient property owners has been obtained to permit establishing the clinic on North Lincoln Avenue. The mayor, on appeal, refused to interfere with the health commissioner's decision, and the entire question was submitted to the corporation counsel for a legal opinion. The committee that has planned the clinic is not affiliated with the Voluntary Parenthood League.

INDIANA

Personal.—Dr. Doris Hoffman, who has accepted the position of resident physician in obstetrics in the Peking Union Medical College, China, sailed from Vancouver, British Columbia, July 26.——Dr. John Harvey Green, North Vernon, has been appointed a member of the state board of health to succeed Dr. J. H. Hewitt, Terre Haute.——Dr. Edward M. Pitkin, instructor in anatomy at the Indiana University School of Medicine, Bloomington, has been appointed medical director of the Martinsville Sanatorium, Martinsville.——Dr. Jacob C. Glass, Greensburg, has been appointed coroner of Decatur County, to succeed Dr. Harley S. McKee, who resigned recently.——Dr. Arthur E. Guedel, Indianapolis, has been reappointed to the city board of health of Indianapolis.

Hospital News.—The contracts amounting to $52,126 for the erection of the new Morgan County Hussey Memorial Hospital, Martinsville, were let, July 3.——The new $500,000 Gary Methodist Hospital, Gary, which has been under construction for the last two years, was recently opened to the public.——The Florence Crittenten Home, Indianapolis, has purchased property at 2044 North Illinois Street on which a well equipped hospital will be erected, it is reported.——Plans presented to the board of trustees by the finance committee of the Indiana University School of Medicine for a nurses' home near the hospital were approved, and the building will be ready for occupancy probably in September.——Plans have been completed for a temporary tuberculosis hospital at Alexandria, to be operated by the county.

IOWA

Personal.—Dr. David N. Loose, Naquoketa, has been elected president of the Jackson County Public Health Association.——Dr. Sara E. Foulks, formerly superintendent of the Davenport Hospital, has been appointed field director of American Women's hospitals in Greece and the islands of the Aegean, it is reported.——Dr. Austin C. Davis, of the department of theory and practice of medicine, University of Iowa School of Medicine, has joined the Mayo Foundation and Clinic, Rochester, Minn.——Dr. Arnold M. Smyth, of the department of pediatrics, University of Iowa School of Medicine, has accepted a position as assistant in the department of pediatrics, Yale University School of Medicine.

LOUISIANA

New Orleans Council Approves Hospital Site.—The New Orleans commission council passed an ordinance granting permission to erect a tuberculosis hospital on the Derby tract in the seventh ward. Thus ends thirteen years of effort to secure an appropriate place to erect a hospital. Present plans comprise the erection of two buildings, one with funds from the Anti-Tuberculosis League, the other with funds donated seven years ago by Mrs. John Dibert, which now amount to $400,000. The Derby tract includes 54 acres, it is reported.

Drain Swamps with Dynamite.—Under the supervision of the state board of health and the U. S. Public Health Service, a demonstration of draining mosquito-infested swamps with

dynamite was made near Natalbany, July 17. The demonstration was made to determine the comparative cost of draining with dynamite and the older methods of draining. It was witnessed by hundreds of drainage officials, engineers and other officers. Engineers believe, it is said, that dynamite will be found much more economical, and thus permit antimalarial work in districts which cannot afford the excessive cost of the usual drainage methods.

MARYLAND

Society to Establish Hospital.—An ordinance authorizing the West Baltimore Medical Society to establish the West Baltimore General Hospital, Raynor Avenue and Florence Street, Calverton, Baltimore, has been signed, and the hospital approved by Dr. C. Hampson Jones, commissioner of health.

Community Health Service.—A center at Annapolis for maternity and child hygiene work is planned by the state department of health. The Emergency Hospital has offered a building for the center.——An orthopedic clinic for the examination and diagnosis of crippled children will be held, July 23, at Easton by Dr. Robert W. Johnson.

MASSACHUSETTS

Physician Sued.—It is reported that Miss Edith Thornberry, Boston, brought suit against Dr. Henry W. Irving, July 22, for $25,000 damages, in which it is alleged that, as a result of an operation for appendicitis performed Feb. 24, 1922, the plaintiff was rendered incapable of motherhood.

MICHIGAN

Insulin Instruction.—Twenty-three physicians from all parts of the state attended the first course in the use of insulin given at the University of Michigan Hospital, it is reported. The course which was to extend only two weeks for the first group will probably be extended for the succeeding group. The hospital will build and conduct a special hospital for diabetic patients which will increase the number that can be properly cared for from fifteen to thirty-five, and which was made possible by the gift of $10,000 by the Rockefeller Foundation. Patients who are unable to pay for insulin, it is said, will be provided with it without charge.

MINNESOTA

Personal.—Richard E. Scammon, Ph.D., has been appointed acting director of the department of anatomy, University of Minnesota, during the year's absence of Dr. Clarence M. Jackson, chairman of the medical division of the National Research Council.——Dr. William J. Mayo, Rochester, Minn., read a paper before the Royal Society of Medicine, London, June 27, on "Surgery of the Hepatic and Common Bile Ducts." A complimentary dinner was given Dr. Mayo by the surgical section of the society at the Hotel Cecil.

MISSOURI

Hospital News.—The Missouri Pacific Employees' Hospital, St. Louis, is ready for occupancy. It has a capacity of 300 beds. Dr. Paul F. Vasterling is the chief surgeon.

Personal.—Dr. James R. McVay, Kansas City, has been appointed a member of the state board of health by the governor, to succeed Dr. Franklin E. Murphy, who resigned.

Green County Lowers Death Rate.—In 1918, the infant mortality rate in Springfield and Campbell townships, Green County, was 105 per thousand. Green County then established a whole-time health department. In 1919, the infant death rate in the above townships dropped to 96 per thousand; in 1920, to 85; in 1921, to 76, and in 1922, to 61. In other words, Springfield and Campbell townships reduced their infant mortality rate 42 per cent. in four years. This, says the U. S. Public Health Service, furnishes a striking example of what may be done to save infants by carrying out a well balanced health program with a well administered health department.

MONTANA

Specialists Organize.—The Montana State Oto-Ophthalmologic Society was organized at a meeting of specialists in Butte, July 11. Dr. Glenn O. Dayton, Butte, was elected president, and Dr. Laurence G. Dunlap, Anaconda, secretary-treasurer. Semiannual meetings will be held, the first in January in Anaconda.

NEBRASKA

Personal.—Dr. Clarence M. Hyland, recently connected with Creighton University College of Medicine, has accepted a position as professor of pathology, Bellevue Hospital Medical College, New York.

NEW MEXICO

State Board Officers.—At a meeting of the state board of medical examiners, June 18, the following officers were elected: Dr. L. G. Rice, Albuquerque, president; Dr. H. G. Watson, Gallup, vice president; Dr. W. T. Joyner, Roswell, secretary-treasurer. A law which became effective June 7 provides that a license to practice medicine can be granted only on examination or by reciprocity. To obtain a license by reciprocity, the applicant must have obtained his license by examination, and have a diploma from a medical school whose standard is as high as that required by the Association of American Medical Colleges.

Resolution Endorsing State Health Department.—The New Mexico State Medical Society, at the annual meeting in Albuquerque, passed a resolution which read in part as follows:

Resolved, That the organized physicians of New Mexico are ready and willing to cooperate with the State Bureau of Public Health in its efforts to increase the scope and effectiveness of its work so long as the rights and privileges of the medical practitioner are respected.

Resolved, That the work of the State Bureau of Health so far accomplished has the indorsement of the New Mexico Medical Society.

Resolved, That the organized physicians of the state pledge themselves to avoid placing an unnecessary burden upon the State Public Health Laboratory, by sending to private laboratories such specimens as can be paid for by their patients, thus relieving the state laboratory of undue expense.

NEW YORK

Southside Hospital Dedicated.—The new Southside Hospital, Bay Shore, L. I., erected at a cost of $250,000, was formally dedicated, July 18.

Hospital News.—A seven-story fireproof building will replace the present structures of the Bikur Cholim Hospital, Brooklyn. It will accommodate about 260 patients; all rooms are to be outside and sunlit, and there will be twelve separate specialist treatment departments. The building will cost $1,000,000.

Personal.—The state industrial commissioner announced, July 17, the appointment of Dr. Leland E. Cofer, New York, as director of the division of industrial hygiene of the department of labor. Dr. Cofer has been an officer in the U. S. Public Health Service for more than thirty years, it is reported.

Insulin Instruction.—The course on insulin treatment of diabetes given at the Clifton Springs Sanitarium, July 23-28, will be repeated once a month. The course comprises lectures on the pathology, chemistry and clinical treatment of diabetes, and demonstrations of the effect of insulin on experimental animals. It is limited to six physicians.

Health Officer Sued.—Dr. Arthur D. Jaques, health officer, Rockville Center, L. I., is being sued for $5,000 damages by a garbage collector, it is reported. Dr. Jaques caused the arrest of the plaintiff some time ago for permitting garbage to fall in the street. The police judge dismissed the case because of insufficient evidence. Shaw now claims that he has suffered personal injury to the extent of $5,000. The village will stand the cost of defending the health officer.

Bond Issue for State Hospitals.—State Hospital Commission statistics indicate the need of the $50,000,000 bond issue which will come before the voters of the state in November. The commission has already outlined a plan for the expenditure of this sum in caring for the insane. Overcrowding is the chief problem at present. The Brooklyn State Hospital, according to this report, has reached the unprecedented figure of 40 per cent. overcrowding; Kings Park, 29.5 per cent., and Central Islip, 30 per cent. To secure attendants and other employees at the small wages now paid is another difficult problem. In thirteen state hospitals there are 7,000 employees. The commission believes that when the public knows the facts, it will support legislation which will provide funds for these institutions.

New York City

New Police Surgeons.—Four police surgeons were appointed by Police Commissioner Enright, July 21. They are Drs. Joseph S. Baldwin, Brooklyn; Edward J. Davin; Edward J. Riley and John J. Loughlin.

Academy of Medicine on Vacation.—It has been announced that the New York Academy of Medicine will be closed dur-

ing the last two weeks of August in order that the building may be renovated. This is the first time, at least in thirty years, that the academy has been closed to the public so long.

A Convalescent Garden.—The Jewish Hospital, Brooklyn, will be presented with a park situated in the rear of the hospital in Prospect Place, comprising 16½ acres. Nathan S. Jonas is donating the plot as a convalescents' garden in memory of his son, J. Seth Jonas. The ground cost $50,000, and $10,000 is being expended in improvements.

Smallpox on Liner.—The Cunard liner *Caronia* from Liverpool and Queenstown arrived in this port recently with two cases of smallpox among her steerage passengers. Twenty steerage passengers and thirteen in the second class, whose vaccinations did not satisfy the ship's surgeon, were removed to Hoffman's Island before the *Caronia* was allowed to pass quarantine.

Cripples in New York City.—A survey by the New York Society for the Relief of the Ruptured and Crippled indicates that there are about 36,000 cripples in this city, and that 50 per cent. of them are under 16 years of age. Nearly one half of them are not receiving treatment. There are about 3,700 cases that have been diagnosed as due to poliomyelitis, Pott's disease and tuberculosis of the joints. The survey indicates also that about 50 per cent. of cripples are not known to any agency.

Courses on Insulin Treatment.—The courses on treatment of diabetes by dietary regulation and the use of insulin in progress at the Presbyterian Hospital will continue until October 5. The enrolment of physicians has exceeded 400. There are a few vacancies in the September courses, but none in the other courses. It is planned to conduct these courses as long as the demand continues, or until the Rockefeller Fund, which supports them, has been exhausted. Full information may be obtained from Dr. George A. Harrop, Presbyterian Hospital, New York.

Unlicensed Physicians on Hospital Staffs.—In answer to a complaint against the practice of retaining unlicensed physicians on the staffs of city and state hospitals, which practice prevents some fully qualified physicians from obtaining appointments, William Drennan, municipal civil service commissioner, and Bird S. Coler, commissioner of public welfare, have admitted this is being done. They claim, however, it is reported, that there has been no improper selection of appointees, and that nonlicensed physicians have been given these positions, owing to a "serious shortage" of young physicians competent to fill vacancies. They point out that such appointments were made possible by an amendment to the public health law in 1918 as a war emergency. It was understood that the license clause would be restored when conditions became normal. It is said that the Kings County Medical Society will take this matter up at its next meeting, to see that steps are taken to rescind the amendment.

NORTH CAROLINA

Typhoid at Greensboro.—Twenty cases of typhoid fever, with one death, have occurred in Greensboro this season, it is reported. Nine cases were reported the first week in July. The cases are not confined to any particular part of the city.

Clinic for Children Reopened.—The city health department of Greensboro has reopened its clinic for children of preschool age, which was closed several weeks ago owing to the prevalence of measles. Dr. Carl A. Grote is in charge of the clinic, which is held at 3 p. m. at the office of the health department.

OHIO

Columbus Without a School Physician.—There has been no school physician for Columbus since January 1, it is reported. In a recent report of the school committee of the Chamber of Commerce to the board of education it was said that lack of adequate medical inspection was responsible for a large per cent. of last year's failures among school children, and was in part responsible for a mortality rate which is higher than any other city except Cincinnati. There has been no systematic medical inspection this year, it is said, and nurses have been taking care of cases reported to them by principals of the sixty city schools. Prior to Jan. 1, 1923, before the resignation of Dr. Ross Hopkins, school physician, he was the sole medical inspector for the city's school children, who number 35,000. Dr. Ross' assistants were four nurses, it is said. The investigation of the Chamber of Commerce showed that while $75,000 is spent annually for physical training and education less than $8,000 a year has been spent for medical inspection since the resignation of Dr. Hopkins.

OKLAHOMA

Personal.—Dr. Elmer E. Darnell, Clinton, was elected president of the Oklahoma Health Officers' Association, recently.——Dr. Ralph C. Meloy, Claremore, has been appointed county physician by the board of county commissioners.

OREGON

State Medical Society Indorses Hospital Officials.—Resolutions were passed by the state medical society, it is reported, appealing to the board of control to consider well the experience, suitability and worth of Drs. Robert E. Lee Steiner, superintendent of the Oregon State Hospital, Salem, and Lewis F. Griffith, assistant, before forfeiting their services. The resolutions read in parts as follows: "We would deplore any change in these official positions so long as they are so well filled, because the benefit and welfare of the helpless insane must alway be the main consideration.

PENNSYLVANIA

Hospital News.—Plans are being drawn for three units for the Conemaugh Valley Memorial Hospital, Johnstown, which will cost $700,000.

Personal.—Dr. John B. Lowman, Johnstown, treasurer of the state medical society, has returned from a trip around the world.——Dr. Mary J. Baker, Newcastle, has been appointed school physician for the ensuing year.

Lehigh University Opens Health Service Department.—A students' health service department has been established at Lehigh University, Bethlehem. The object of the new department is to safeguard the health and general physical welfare of students. A dispensary will be maintained. Students will be given a thorough physical examination at least once a year. Their living quarters will be supervised from the standpoint of sanitation. Dr. Raymond C. Bull, major, U. S. Army, retired, will be director of the health service department. He will have regular office hours during which students may avail themselves of free medical service.

Philadelphia

Hospitals Favored in Will.—The residue of the $68,000 estate of the late Mrs. Sarah E. Wiltbank, after the deaths of her husband, her son and other relatives, will be divided among the Children's Homeopathic Hospital, the Home of the Merciful Saviour for Crippled Children, and the Polyclinic Hospital.

Personal.—Dr. Henry D. Jump has been appointed to the chair of applied therapeutics in the Woman's Medical College. Dr. Jump is on the staffs of the Philadelphia General and the Misericordia hospitals.——Dr. Edward E. Montgomery, Philadelphia, will soon retire after fifty years of active practice. He will start in September on a trip around the world, which will continue until 1926.——Dr. Herbert M. Goddard has been appointed by Governor Pinchot a member of the board of inspectors of the Eastern Penitentiary.——Dr. Lee H. Bernd was elected president of the Third Division Society at its fifth anniversary of the Battle of the Marne, July 14.

TENNESSEE

Trachoma Hospital to Be Moved.—The Trachoma Hospital, Morristown, will be moved to Knoxville about September 1, it was recently announced. The Staub home, at Locust Street and Clinch Avenue, Knoxville, has been purchased for this purpose, and will be moved to the Knoxville Health Center grounds, remodeled, and enlarged. The entire hospital equipment will be furnished by the federal government. Dr. J. E. Smith, who has been in charge of the hospital at Morristown, will remain in charge at Knoxville.

VIRGINIA

Smallpox on Train.—A negro passenger having smallpox was recently removed from a train at Acoa. Health officers from Richmond, it is said, removed the patient, declared a temporary quarantine, and proceeded to vaccinate all of the passengers.

WASHINGTON

Personal.—Dr. Edward L. Brinson, Bellingham, was recently appointed county health officer of Whatcom County.

Hospital News.—It is reported that about $125,000 will be expended in remodeling the Northern Pacific Beneficial Association Hospital, Tacoma, and that the work will be completed in three months.

WISCONSIN

Patient Sues Chiropractor.—Walter G. Knoblauch, chiropractor, Milwaukee, is defendant in a suit for $50,000 brought by Mrs. Alvina Faulkner who alleges, it is reported, that too much pressure was used in treating her for an alleged dislocated spine and that as a result she received injuries which made her a cripple.

Board of Medical Examiners Cannot Refund.—An itinerant practitioner paid $250 for a license to practice for the year 1923, then requested a refund when he decided not to practice as an itinerant after March 15. The attorney general held, in an opinion to the secretary of the state board, that there is no provision in the law authorizing the return of any part of the fee after the license has been secured for a definite time, and that the board cannot grant a license for a fraction of a year.

GENERAL

Island Hospital for Drug Addicts Planned.—The officers and directors of the American Narcotic Crusade will soon go to San Clemente Island, near Los Angeles, to inspect the site for an institution for the treatment of drug addicts. It is planned to construct several buildings on the island.

Scholarships for Nursing.—A $10,000 fund for scholarships in public health nursing has been established by the American Child Health Association, it was recently announced. The scholarships range from $200 to $1,000, and are to provide selected courses in colleges, normal schools and universities, and special courses in schools for nursing.

Recreation Congress.—A recreation congress will be held in Springfield, Ill., October 8-12, under the auspices of the Playground and Recreation Society of America. The program comprises discussions of athletics for girls, the national physical fitness campaign, adult recreation, community music, home play, playground architecture and other topics. The last congress at Atlantic City, N. J., was attended by 600 delegates from the United States and Canada, which number probably will be exceeded at Springfield.

League of Nations to Study Chemical Warfare.—J. Enrique Zanetti, assistant professor of chemistry, Columbia University, New York, has been appointed to a committee of the League of Nations, which will investigate the question of chemical warfare. It seems probable, it is said, that the aim of the league is to make a thorough study of chemical warfare and to embody in its report recommendations as to the continuance of such tactics. The American Chemical Society reminds us that chemical warfare is receiving attention abroad; that Italy has organized a chemical warfare service approximately twice the size of our own, and that England and France support services which correspond to this branch of our service. Belgium also has organized a similar service. There is great activity, it is said, within the chemical industry in Germany, although the only official activity is the chemical warfare defense school.

CANADA

Amendments to Ontario Practice Law.—Ontario has recently secured an amendment to its medical practice act closing the door against osteopaths, chiropractors and other drugless healers unless they hold the qualifications which the medical council requires of physicians. A clause provides that only such students in the province who are at present actually enrolled in the one drugless college may be enabled later to secure licenses. This implies that no others will be accepted by the licensing body. A new definition of medical practice was also secured which is practically identical with that of New York. This definition reads:

> Every person shall be deemed to practise medicine within the meaning of this act who holds himself out as being able to diagnose, treat, operate or prescribe for any human disease, pain, injury, disability or physical condition, or who shall either offer or undertake by any means or method to diagnose, treat, operate or prescribe for any human disease, pain, injury, disability or physical condition.

LATIN AMERICA

Public Meeting to Discuss Leprosy.—A conference was held recently at Paraná in Argentina to discuss ways and means to arrest the spread of leprosy in the province. The meeting was held in the theater, the governor presiding, and Drs. Rivas Jordán, Aberastury, delegate from the national public health service, Repetto, Nicolini, Chiara, Sobral and Saure were appointed a committee to draft the resolutions to be voted on. Several speakers emphasized that the province had only a comparatively small number of lepers, but that this was the very reason for strict measures to retain this favorable position.

Personal.—Professor Rabello of Rio de Janeiro recently delivered at the Paris Faculté de médecine an illustrated lecture on the campaign against venereal disease in Brazil. ——The *Gaceta Médica Peruana* of Lima mentions the return to that city from a trip to Europe of Drs. Carlos E. Paz Soldán and Honorio F. Delgado.——Dr. T. A. Tonina of Buenos Aires has retired from his connection with the Hospital de Niños, and was tendered a farewell banquet by the medical staff.——Dr. Carlos Franco, the syphilologist, June 1, gave the first lecture of the series organized by the Mexican Medical Association.——The governor of the state presided at the recent inauguration of the clinic at Guadalajara. Dr. Barriere, professor of clinical medicine, and Sr. Trinidad Vázquez, president of the Sociedad de Estudiantes de Medicina, which organized the celebration, spoke on the occasion.

FOREIGN

Restricting Number of Medical Students in Norway.—The Norwegian government, according to the *Ugeskrift for Læger* (July 12), has ordered that the registration of medical students at the University of Christiania shall be limited to sixty a year.

Distribution of Physicians in Japan.—In view of the increasing infant death rate in Japan, the home office has decided to make a survey through the prefectural government of the physicians, nurses and midwives in towns and villages which appear to be insufficiently provided with duly qualified physicians.

Hospital Ship in Norway.—To ameliorate the lack of hospital facilities of the fishery population of northern Norway, the Red Cross hospital ship *Viking* has been equipped and dedicated to that service. The ship contains a modern operating room, an isolation ward and forty-nine beds, besides a room for the violent insane.

Donation for Treatment of Cancer in Italy.—Senator Pescarolo has donated 200,000 lire to the hospital of Saint John, at Turin, for free hospital service for surgical and irradiation treatment of cancer. In 1913 an institute for medicosurgical radium therapy of cancer was established at the same hospital under the management of Professor Bertolotti, financed by the city of Turin.

The Nieper Endowment.—In honor of the fiftieth anniversary of the medical degree of Dr. H. O. A. Nieper of Goslar, Germany, the Nieper fund of five million marks in favor of hospital patients was organized by the city, while a wholesale firm donated a million and a half to the Nieper endowment for the same purpose. The local medical society presented him with an engraved address, and presented the hospital with a bust of Dr. Nieper.

Chinese Practitioner Jailed.—A Chinese "doctor" of Shanghai was recently convicted of manslaughter and sentenced to nine months' imprisonment for the death of a patient whom he treated for a "swelling" on his neck, it is reported. The doctor offered to cure the malady for $10, and prescribed pills containing mercury, which were all to be taken at one time. It was certified, after analysis of the pills, that they were the cause of death.

Memorial Meeting for Roentgen in Berlin.—The three German societies for physical and applied physical sciences and roentgen rays held a joint meeting at Berlin in the large hall of the university in memory of Roentgen. The president of the republic and scientific notables from all over the country attended, and the importance of Roentgen's discovery was proclaimed by specialists in different branches of science, Levy-Dorn speaking on "The Influence of Roentgen's Discovery on Diagnosis and Treatment."

Sanitation in Palestine.—The incidence of malaria and trachoma in Palestine has been much reduced since the war, by sanitary measures and hospitalization in Palestine, it is stated, as the result, principally, of American agencies. The antimalarial work was formerly under the auspices of the American Hadassah Medical Unit. It has been taken over by the Palestine government, but is still financed by the Jewish Joint Distribution Committee of New York. This unit, which before the World War comprised forty persons, has expanded into an organization of nearly 500 members, with a budget of about $45,000 a month.

Centenary of the Lancet.—The completion of the one hundredth year of the *Lancet* will be celebrated at a dinner in London, Nov. 28, 1923. Sir Donald MacAlister, president of the General Medical Council, will preside, supported by the

president of the Royal Society, the president of the Royal College of Physicians, London, the president of the Royal College of Surgeons of England, the chief medical officer of the ministry of health, the president of the Royal Society of Medicine, and the president of the Medical Society of London. Dr. J. H. W. Laing and Mr. H. D. Gillies are acting as honorary secretaries to the dinner committee.

Inauguration of Large Hospital in Belgium.—The official opening of the new hospital at Jette, Saint-Pierre, near Brussels, took place, June 18, in the presence of the king and queen of Belgium and government authorities of the province of Brabant, scientists from universities and hospitals, physicians, surgeons and specialists. The hospital was built at the cost of 30,000,000 francs, donated by G. Brugmann, on the system of a number of separate pavilions occupying a large tract of land in the center of which is a park of turf and flowers, traversed by roads leading to the different buildings, destined for various medical uses. It is located on a plateau overlooking the city.

Personal.—Dr. Recasens, professor of gynecology at Madrid, has been made a commander of the French Legion of Honor since the return of the recent visit of the party of Spanish physicians to France. He has been invited to address the medical faculty of the University of Berlin.——Dr. A. A. F. Baptist of Megen, Holland, was the recipient of a community-wide demonstration in his honor, July 1, in recognition of his twelve years of service there.——Dr. C. U. Ariens Kappers, Amsterdam, director of the Netherlands central institute for research on the brain, has been appointed by the Rockefeller Foundation to give a course of lectures on the anatomy of the brain at the Peking Medical School, and will leave for China in August.——Dr. Piñeria, professor of chemistry, University of Madrid, will be guest of honor at a banquet given in connection with the unveiling of his bust in his lecture hall by former students on his reaching the age limit. ——Dr. Gustavo Pittaluga, Madrid, has been elected to the lower house in Spain.

Deaths in Other Countries

Dr. **Jacob Somme**, Reknes, Norway, March 23, of influenzal pneumonia, aged 57.——Sir **Benjamin Simpson**, late surgeon general and sanitary commissioner with the government of India, June 27, in London, aged 92.——Dr. **José Casari**, Buenos Aires, director of public welfare of the province of Corrientes, and member of the council of hygiene and director general of hospitals.——Dr. **Giovanni Verga**, Turin, orthopedist.——Dr. **A. G. Parrott**, long a medical missionary at Shanghai, China, aged 67. He was born in England, and qualified for medical practice after six years of work in the mission field.——Dr. **Marc Bouillios**, major of the colonial troops of France, aged 42. Among his published works are his experimental studies of human and animal trypanosomiasis.——Dr. **Pouthiou-Laviella**, major of the French colonial troops, Hué, Annam.——Dr. **J. Marcorello**, surgeon of the hospital of Marseilles and former professor at the medical school of that city.——Dr. **Antonio C. Merlano**, professor on the medical faculty of Cartagena, Colombia.

Government Services

Additional Hospitals for Veterans

Bids for the construction of a 200-bed Veterans' Bureau Hospital at Livermore, Calif., will soon be advertised. Another 250-bed hospital will be built later at a place to be selected in southern California.

Examination for U. S. Public Health Service

Examinations for entrance to the regular corps of the U. S. Public Health Service will be held, Sept. 3, 1923, at Chicago, Washington, D. C., and San Francisco. Requests for information should be addressed to the Surgeon-General, U. S. Public Health Service, Washington, D. C.

Additions to Army Hospitals

A new wing to the U. S. Army Letterman General Hospital, Presidio of San Francisco, is being constructed at a cost of $50,000.——A special building will be erected at the U. S. Army William Beaumont Hospital, El Paso, to house the electrical treatment appliances.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 14, 1923.

The British Empire Leprosy Association

At a meeting held at the foreign office, under the presidency of Lord Chelmsford, it has been decided to form a British Empire Leprosy Association. The movement owes its initiation to Sir Leonard Rogers, whose discoveries in the treatment of leprosy are thought to have brought within the sphere of possibility the ideal of the association—the eradication of the disease within the empire. It was pointed out that the British Empire has more known lepers than any other power in the world, but is doing for its lepers far less in proportion than is being done in the United States. Less than 5 per cent. of our lepers are being cared for in any way, and of these only a small proportion are receiving the recently improved methods of treatment. This is mainly due to the poverty of the countries most affected—India, tropical Africa and the West Indies. A general committee, including leading physicians, authorities on tropical medicine, and public men, was appointed.

New Headquarters for the British Medical Association

The British Medical Association has purchased new and larger premises in Tavistock Square, Bloomsbury, known as the Theosophical College. This is a modern building which was never completed, as it was taken over by the government during the war. The present house of the association has become inadequate for the growing activities of the departments. Both the position and the building are eminently suitable. Bloomsbury is becoming more and more the educational center of London. In it is the British Museum, and a little to the north of the district is University College. Both the museum and the college have been greatly extended in recent years. In Bloomsbury also a site has been selected for the Imperial School of Hygiene, and eleven acres has been bought by the government for the headquarters of the University of London. The new house of the association is near the center of Bloomsbury; it abuts on one of the chief north and south thoroughfares of London and is near the chief northern railway terminals. It has a total floor area of 58,000 square feet, while that of the old premises was only about 18,000. The building was designed by a leading architect, and is of considerable beauty. It stands back from the road, round its own quadrangle. It can provide full facilities not only for the business of the association, but also for all the amenities of a club, if desired.

The Epidemic of Smallpox

As stated in a previous letter, the form of the smallpox epidemic in Gloucester is mild, so mild that it was at first mistaken for chickenpox. But an infant has died from confluent smallpox, which ought to go some way in convincing those who, led astray by the antivaccination campaign, doubt the existence of the epidemic. The action of Dr. Hadwen, the leader of the antivaccinationists, is, even for him, extraordinary. He approached the father of the child with the view to a postmortem examination after the body had been handed over from the hospital for burial. He went to the cemetery for the purpose. The clergyman agreed to delay the funeral, but pointed out the risk of infection. The undertaker, however, refused to open the coffin. Dr. Hadwen stated that his object was to examine the eruption and the condition of the organs to determine whether the child had been properly fed. Whether the disease was smallpox or chickenpox, he saw no reason for believing that death would have resulted from

either disease. He alleged that patients with flea bites, insect bites, heat rashes, red gum, nettle rash, impetigo and a host of conditions had been carted off to the smallpox hospital. The mischief done by such statements from the mouth of a physician made to the people, the majority of whom would be unable critically to examine them, can be imagined. The number of cases of smallpox admitted to the hospital at Gloucester in the last week was eighty-nine. In the ten weeks, ending July 7, there were outbreaks of smallpox in eighteen counties of England and Wales. During the first half of this period, there were 152 cases and during the second half, 557. In the week ending July 7 there were more than four times as many cases as in the week ending May 5.

The White Man in the Tropics

Lecturing on tropical hygiene at St. Bartholomew's Hospital, Dr. Andrew Balfour stated that women and children were affected to the greatest extent by tropical climates. No matter what hygienic precautions were taken, a change to a cooler climate or higher altitude once a year was necessary. The growth of children in the tropics was stimulated but was not accompanied by a corresponding increase in weight and strength, and after the tenth year, the memory and power of application tended to degenerate. They should, therefore, be sent home to complete their education. The first symptom of the evil effects of hot climates on man was weakening of the will power, and this usually led to laziness and vice. The nervous system was certainly affected by long residence in such regions, in spite of all the safeguards that could be devised. Possibly, atmospheric electrical conditions were a larger factor in this than was at present realized. The many complex problems which arose afforded a great field for research to the biochemist, but, unfortunately, this had not been accomplished in England.

Sir Clifford Allbutt on the Advances of Medicine

The Triennial Gold Medal of the West London Medico-Chirurgical Society was presented to Sir Clifford Allbutt, who in disclaiming his title to the honor said that he thought that his professional brethren looked on him, in the Bismarckian phrase, as an "honest broker" in the medical mart between producer and consumer. The marvels of the present age impressed him deeply. New conceptions and achievements were leading to a greater power over diseases; but what would happen to the medical student of the future with so much to learn, he dared not imagine. Looking back on a long professional life, he could not but regret the passing away of the old style of general practitioner, whose accomplishments and devices and instinctive skill used to fill him with wonder; in the flights of scientific medicine there was some risk of neglecting the craftsmanship of such men.

PARIS

(From Our Regular Correspondent)

July 6, 1923.

Controversy Between Alienists and Neurologists

An annual congress of psychiatrists has been held in France since 1890. In the beginning it was called Congrès de médecine mentale. But, in 1894, the neurologists, more particularly, Professor Brissaud, requested that the name of the congress be changed to Congrès des aliénistes et neurologistes. The alienists approved the change. Since 1894, therefore, the program of the congress has always contained, among other topics, a neurologic subject, and the presidency has been bestowed alternately on an alienist and a neurologist. Many alienists are now beginning to protest against this state of affairs, mainly for two reasons: 1. Very few neurologists attend the congress. At the congress held in Strasbourg in 1920, there were only seventeen neurologists present as compared with 167 alienists. The congress at Luxemburg, in 1921, was attended by eighteen neurologists and 234 alienists. At Quimper, in 1922, there were 148 alienists registered, but only nine neurologists. 2. Three years ago, the Société de neurologie organized an international neurologic conference in July, although the regular congress was to be held and was held within less than a month. Since then the neurologic conference has been held every year.

Dr. Antheaume, director of the *Informateur des aliénistes et des neurologistes*, has instituted an inquiry on the subject, having addressed to 233 French alienists the following questionnaire: 1. Are you in favor of maintaining the congress of alienists and neurologists of France and French-speaking countries under its present title and designation? 2. Are you in favor of reestablishing the congress of mental medicine and assigning to it the name: Congrès des aliénistes de France et des pays de langue française (congress of the alienists of France and French-speaking countries)?

Of the 186 psychiatrists who replied, 155 declared that they were opposed to maintaining the congress under its present title, and recommended that the congress be reorganized.

It is of interest to note the character of the arguments presented by certain well known alienists in support of their opinions. Dr. H. Colin, senior physician of the admission service of the Saint Anne Asylum, does not think that a fusion of psychiatry and neurology is possible. The patients and the methods of observation are not the same, he says. Whereas in neurology the objectivity of certain cardinal symptoms allows of a rapid and, for the most part, accurate diagnosis, in psychiatry, a prolonged observation is often indispensable. This observation requires the participation not only of the physician but also of all his assistants. The analysis of transient functional troubles and of innumerable modifications of intellectual phenomena, together with a psychologic understanding of the patient, his tendencies, his reactions, his emotivity, are also needed. That is why no other branch of medicine requires so long an apprenticeship as the study of mental diseases. It is only after several years' practice that a psychiatrist is qualified to give a prognosis, in many instances. Others regard the fusion of 1894 as a mistake for the reason that it caused the congress to deviate from its principal purpose, which was the study of psychiatry and research on the progress to be secured in the hospitalization and treatment of psychopaths, a matter of no particular interest to neurologists. It has led neurologists to regard psychiatry as simply an emanation or offshoot of neurology, and the result has been that with every congress the field of psychiatry has become more and more restricted until it no longer has sufficient space.

Only a small minority favored the maintenance of the status quo. Professor Cestan of Toulouse holds that neurologists and psychiatrists are united by the closest bonds; for, he explains, neurologic affections and psychoses are the branches of a common trunk. Therefore, no action should be taken that will widen the existing artificial breach, but, instead, an effort should be made to increase the number of scientific contacts. Professor Euzière, dean of the medical faculty, University of Montpellier, is of the opinion that it is now more necessary than ever for psychiatrists and neurologists to collaborate, if for no other reason than that there is a borderland between neurology and psychiatry which neurologists and psychiatrists should explore hand in hand.

The question has also been raised whether the words *"de France et des pays de langue française"* (of France and French-speaking countries) should be retained in the designation of this congress. Dr. Fauvel of Quimper thinks these words are superfluous and that it goes without saying that French-speaking countries are included; for instance, Belgium and Switzerland are always represented at our congress of medi-

cine and our congress of surgery. On the other hand, this designation has the disadvantage of seeming to exclude representatives from Anglo-Saxon countries. It will be a distinct gain to facilitate their participation in the congress of psychiatry.

Stipends for Students

The municipal council of Paris has assigned to the University of Paris the sum of 50,000 francs to be used in aiding students of French nationality to secure proper lodging.

Pseudoscientific Endocrinology

To read certain articles on the endocrine glands, one might easily imagine oneself transported to the time of scholasticism or to the period when Molière made medical jargon the butt of his wit. Note, for example, these lines taken from an article entitled, "Duality and Glandular Interchange," which appeared in the *Journal des praticiens:* "We may say, then, that the contents of the vascular glands are a heavy gaseous substance, capable of expansion and compression. This gaseous substance controls the vitality of the organism, and presides over the formation of embryonal life, and the growth of fetal and extra-uterine life. All the vascular glands communicate with one another and constitute our central cavity, which is filled like a sac by the vital gaseous body which is our soul, our character, our personality; the presence of which determines our life and the absence of which brings death. . . . As the result of castration, the genital level of the inferior pole of the axis of the body is lowered, while the pressure of the superior thyroidal pole is raised."

Scientific Expedition to Madagascar

A scientific expedition is being fitted out for Africa under the direction of M. C. Moureu, professor at the Collège de France, who will be assisted by M. Lepape, head of laboratory work in the Institut d'hydrologie of Paris and by M. Henri Moureu, preparator. The main purpose of this expedition is to study the mineral waters of Antsirabé, which are said to resemble the waters of Vichy and also to possess radioactivity. M. Moureu and his collaborators intend to make researches on the chemical composition of these waters; also their content in helium and in rare gases.

BELGIUM

(From Our Regular Correspondent)

July 10, 1923.

Medical Congress of Ghent

At the request of the organizing committee of the Exposition des travaux des invalides de la guerre, the medical section of that committee arranged for a congress to be held at Ghent, April 15-16, 1923, for the purpose of dealing with certain questions pertaining to war disabilities. The delegates of the allied nations to the "Exposition" responded readily and, with a number of Belgian physicians, helped to make the congress a success.

The congress studied especially questions pertaining to the pathology of the war injured: prosthesis, reeducation, traumatic neuroses and the formulation of a "ready-reckoner" for estimating the degree of disability. Special mention should be made of the study of the sequels of "gassing." Drs. Spehl and Dautrebande reached the conclusion that the disorders observed are due mainly to a chronic anoxemia. They pointed out the functional derangement from which the different organs suffer under the influence of defective respiration, and emphasized the dangers from this chronic state, the most important of which is a symptom complex which is usually designated by the term "neurasthenia." It is difficult to determine whether the disorders observed at the present time in the so-called *"petits gazés"* (those who received only a small dose of gas) are due to the original gas intoxication or to other causes that may or may not be connected with the war, the manifestations of which resemble those of neurasthenia. It seems likely that an inquiry now being conducted will settle the question.

New Researches on Epidemic Encephalitis

Before the Société belge de biologie, Bessemans and Van Boecker reported recently the results of their researches on the infectious agent in epidemic encephalitis. Of ninety-one animals inoculated by diverse methods with pathologic material taken from patients suffering from encephalitis (brain, spinal fluid, abdominal and thoracic viscera, serum and whole blood, pharyngeal secretions, gastric secretions, urine and filtered salts), sixty-four survived; eighteen succumbed from accidental affections; seven rabbits and two guinea-pigs died with suspicious clinical symptoms and histopathologic changes. With material taken from the brain of these seven rabbits the disease was transferred in two instances to the third and fourth generation. Then the various strains were found to be no longer virulent.

Reforms in Medical Education

This important discussion, which was begun more than a year ago at the Royal Academy of Medicine of Belgium, the principal conclusions of which we have already reported, has now been brought to a close with a very important suggestion from Dr. De Beule of Ghent. After completing the organization of medical studies, the academy found it necessary to consider the medical profession itself. As the law now stands, any graduate physician in Belgium may launch forth as a specialist in any branch of medicine. De Beule has raised his voice against this abuse of privilege. He states that there is a tendency to overdo specialization at the present time. It is a well known fact that, during his university studies, the student acquires only a very elementary conception of the different specialties. How often, however, have we seen young physicians, who, during their internship, devoted themselves more particularly to some specialty or other and afterward spent two or three months at some foreign university (where all they did, very frequently, was to view patients from a distance) attach to themselves a pompous title of specialist, fearing nothing and ready to do anything or to undertake any case, no matter how difficult. This state of affairs, the writer insists, should no longer continue, but nothing other than a change in the law can put a stop to it. Would it not be feasible to create a diploma based on bona fide postgraduate study, the purpose of which would be to furnish evidence of having passed a severe test, not only in theory but in practice as well, before a competent body, which should not consist exclusively of members of the instructional corps but should include also eminent specialists? A young physician desiring to specialize in any branch of medicine should be the holder of such a special diploma.

In conclusion, De Beule proposed the following somewhat radical resolution:

> No one may call himself a specialist or practice a specialty, or be in charge of a special service in a hospital, dispensary or a private or public institute, unless he is the holder of a diploma bearing on the specialty concerned.

The personal influence of Dr. De Beule carries great weight in this matter, for he is regarded somewhat as the head of the younger school of Belgian surgeons. Then, again, his views seem to be the reflection of the present-day attitude toward this subject.

The academy did not ratify completely De Beule's views, but it was sufficiently influenced by his opinion to declare the need of organizing at every university special courses of instruction for doctors of medicine, surgery and obstetrics,

with the view to furnishing adequate training for specialists. It may be said, therefore, that this discussion constitutes a landmark in the evolution of medical opinion in Belgium.

VIENNA

(From Our Regular Correspondent)

July 2, 1923.

Infant Mortality in Austria

In a report by the board of health on mortality statistics of infants, the slowly improving conditions in this country are well illustrated. In 1913, the average for each hundred babies born alive was 17.88 deaths within the first year; in 1919, it was 16.93. The years of the war are not taken for comparison, as these figures would give an erroneous impression. In 1919, the figure stood at 15.77. It remained nearly the same in 1920 and 1921, and then fell to 15.06 in 1922. Vienna had a ratio of 15.60 in 1913. In 1919, it was 19.88, and in the succeeding years 15.05, 13.07 and 12.82. The figures show distinctly that the strenuous efforts of the authorities to enlighten the public on the necessity of early medical help and the modern methods of feeding are giving good results.

Infectious Diseases in 1922

In Austria the diseases that are notifiable are scarlet fever, diphtheria, typhoid, dysentery, epidemic meningitis, puerperal sepsis, exanthematous typhus, smallpox, Asiatic cholera and trachoma. Measles is no longer notifiable. The number of cases reported in the year 1922 were, in the order mentioned, 2,658, 2,807, 2,303, 1,196, 18, 293, 23, 4, 0 and 320. The four cases of smallpox occurred in Vienna, and were all imported from southeastern Europe. Dysentery, trachoma, exanthematous typhus and epidemic meningitis were also reported chiefly from Vienna because all these cases are sent to the large clinics there. Cholera has been nonexistent for two years; this is a source of merited pride to the sanitary administration. The outbreaks of the other diseases were promptly subdued without difficulty. While the central provinces of the Federated Republic of Austria—the name of which we boast—remain comparatively free, the frontier districts, especially those bordering on Jugoslavia and Hungary, are rather more exposed to the influence of the unsettled conditions that prevail in these parts of Europe.

Special attention centers around the incidence and mortality of tuberculosis. This disease is not notifiable yet; but exact statistics are available from the reports of the hospitals, the poor-law medical officers of health, and the mortality reports. From 1911 to 1919, the average annual mortality from this cause was 17,622; from 1919 to 1921, it was 17,972. Herein are visible the results of the war, which in many men caused a latent infection to flare up. A drop is expected in the next three years, when the improving conditions of life will become effective and the reinfections or exacerbations resulting from the privations caused by the war will have died out. The mortality rates for each thousand of the population were: in Vienna—from 1911 to 1914, 3.07; in 1919, 5.33; in 1920, 4.00; in 1921, 2.86 (an average of 4.03 for the three years last mentioned); in the provinces, between 2.43 and 2.59 for the years 1911 to 1914; and 2.20 and 2.77 for 1919 to 1921. For the whole country the average figure in the first three years was 2.70; in the last three years it was 2.93. There is remarkable uniformity in the figures for the various provinces with little difference between the industrial and rural provinces.

Wagner-Jauregg's Malaria Treatment of General Paralysis

An interesting paper was read a few days ago before the Vienna Neurologic Society by Professor Wagner-Jauregg on his observations since 1908. In 1887 he had suggested treatment of patients suffering from general paralysis by subjecting them to an attack of fever; he had observed that marked improvement took place if such a patient happened to acquire erysipelas, typhus or influenza. He experimented with tuberculin (Koch), then a new substance. With this he produced fever in general paralytics, and, by combining this treatment with mercurial inunctions and injections, was able to improve the symptoms markedly in several cases. These experiments were reported before the International Medical Congress of 1909, in Budapest. Some of the patients shown at that time are still alive and well. When arsphenamin was introduced by Ehrlich, the combined tuberculin-arsphenamin treatment was tried, with similar results, and, in 1911, eighty-six cases were reported by Dr. Pilcz from the Wagner clinic. Of these eighty-six patients, twenty-three were rendered fit for their usual occupations and were practically "cured" of the general paralysis. The condition of these patients remained stationary for periods ranging from two to seven years, some even until now, twelve years later. If relapses occurred, another series of combined injections was given, generally with satisfactory results. In the course of his observations, Wagner experimented also with polyvalent typhoid vaccine, used alone or in conjunction with tuberculin, mercury and arsphenamin. The effects are more prompt, and the fever-producing factor is safer. Not satisfied with the variable results obtained, he at last resolved to imitate the rare instances of superimposed infectious disease, and, in 1917, he infected nine patients with the plasmodium of tertian malaria. The patients were allowed to suffer eight or ten attacks of fever; quinin was then given, and was followed by a series of injections of neo-arsphenamin. The result after two years was: six patients permanently free from symptoms—after six years they are still well and working—the other three only little improved. In 1919, the experiments were undertaken on a large scale, and since that time more than 300 patients have been subjected to the treatment. After a preliminary report before the meeting of the German Natural Scientists at Mannheim in 1920, an extensive paper was presented, in 1922, at Leipzig, before the same society, comprising 294 cases with 202 complete remissions—i. e., fitness for work in the former occupation, and freedom from symptoms of disease—otherwise termed recovery. Wagner-Jauregg thinks that the earlier a patient is put under this treatment, the better are the chances for recovery. Improvement often starts only after the fever attacks are over; it then continues for some time and must be stimulated in many patients by a repeated series of injections. As the cases comprise all stages and ages of illness, he believes that there is no better method for treating this condition than the combined malaria-arsphenamin treatment; a prolonged remission can always be expected and, in about 50 per cent. of the cases, permanent recovery may be anticipated. Early recognition of the disease is therefore almost a guaranty of permanent cure.

BERLIN

(From Our Regular Correspondent)

June 30, 1923.

A Mutual Stock Company to Insure Policyholders Hospital Care

Among the financial burdens that at present weigh most heavily on many persons of the middle class may be mentioned the cost of medical attendance; hospital care and treatment, especially, have become so expensive that a stay in a hospital is impossible for many, or necessitates the greatest sacrifices. Whereas those persons who, on the basis of the federal insurance act, are compelled to carry health insurance, are relieved of the burden through the protection afforded by the health insurance societies, all whose income

is such as to exclude them from participation in the social insurance plan are dependent on their own resources. In social welfare circles a solution for this difficult problem has been sought for some time, but the question has not been solved. The situation has recently become so acute that it has been decided to make a new attempt to aid the persons affected. After much preliminary investigation, in which those familiar with social problems assisted with their advice, a mutual stock company (the "Salus," as it will be called) has been formed, which will essay to provide hospital care and treatment (presumably for a period of thirteen weeks in the year) for those strata of the population, chiefly of the middle class, that do not come within the scope of compulsory insurance and yet lack adequate means. For this service a small annual premium will be charged. In addition to the board of directors and the supervisory council, an administrative council will be chosen, on which, besides the authorities, also the trade unions concerned and social welfare organizations will be represented. The company will be entitled to take up other lines of insurance and to work in common, in any way desired, with other insurance companies, and to participate in undertakings that are in harmony with the purpose of the original project. The shares of the company will have ten detachable coupons and a renewal certificate, in the name of the owner. The profits of the stockholders will not be allowed to exceed 6 per cent. of the cash price paid for the shares. The utilitarian purpose of the undertaking can best be preserved by granting a low rate of interest and devoting excess profits to the real purpose of the corporation, in order that all persons insured and their families may be assured adequate hospital care and treatment.

The insured is guaranteed, after the lapse of a certain time, dating from the day of admission to the hospital, for a period of thirteen weeks (taken continuously or collectively) within a given year, the payment of all charges for hospital care and treatment, provided the physician in charge of admission to the institution concerned certifies to the need of hospitalization. The insured may choose any hospital on the list endorsed by the corporation. Section 4 describes the conditions on which the insurance is based and the limitations as to employment and indulgence in sports, certain restrictions being imposed on service in the army and navy, aeronautics, hunting, certain dangerous sports, mountain climbing, automobiling, bicycling and the use of motors.

Decrease in the Meat Supply of Germany

According to the *Klinische Wochenschrift*, the consumption of meat in Germany has decreased from 52 kg. for the period immediately preceding the war to 26 kg. in 1922. The consumption of pork, which, not only on account of its protein content but also by reason of its fat, may be regarded as the chief article of food, has been affected most. Comparing the records of February, 1923, with those of 1913, we find the decrease apportioned thus: beef, 13 per cent.; veal, 32 per cent.; mutton, 47.6, and pork, 68 per cent.

Economic Distress of German Physicians

Lest I be accused of giving a too pessimistic account of the economic situation in Germany today, I will quote some extracts from an article by a well known Berlin physician, which appeared in one of the largest Berlin dailies:

"The number of physicians who have been compelled largely to give up their medical practice and devote themselves to other work, is constantly increasing. One meets physicians everywhere—in the banks, in industrial plants, employed as traveling salesmen or as insurance agents—and not only the younger physicians but the elderly as well. But the demand for positions is greater than the supply. The Berlin "chamber of physicians" is ever ready to do all in its power to procure situations for medical men, but unfortunately it is often very difficult to satisfy all requests, since retrenchment seems to be in order on every hand, and in response to its numerous petitions to banks, chemical works, etc., for the most part courteous but yet discouraging replies are received. A large percentage of the young physicians, when they set up their practice, are compelled to take on some outside work to aid in their support. Forenoons, at the bank; afternoons, consultation hour; evenings, study, is the daily round of many young medical men. The wretched economic situation exerts a bad effect on their further medical training. Whereas formerly the postgraduate courses of the Kaiserin Friedrich-Haus were well attended, scarcely a vacant seat being found, today the attendance is only a third of what it was previously. The depression of the culture level of the middle classes has taken on a disastrous form when it begins to lay hold of the physicians. Solicitude for the material necessities of life puts a damper on cultural development and aspirations."

Seventieth Birthday of Professor Strümpell

June 28, the director of the medical clinic in Leipzig, Professor Strümpell, celebrated his seventieth birthday. His name is well known to all medical men, especially to students who have used his textbook, which during the last forty years has passed through twenty-four German editions and has been translated into nearly all cultural languages. This excellent work shows the essential qualities of Strümpell as a writer on scientific medicine: the results of his own researches, his experience in many branches of internal medicine, his prominence in the field of nervous diseases, and his excellent didactic ability. Strümpell studied under Wunderlich, E. Wagner, Ludwig, Cohnheim and Weigert. In 1875 he became assistant director of the Leipzig Medical Clinic. He became a professor at the university and was later appointed director of the Medical Policlinic. Among his numerous works, those of neurologic content (as already mentioned) prevail; for example, "Diffuse Cerebral Sclerosis," "The Nature of Tendon Reflexes," "Spastic Spinal Paralysis," and "The Physiology of Sleep." Another work deserving particular mention is a treatise on "A Spindle-Shape Enlargement of the Esophagus," chronic ankylosis of the spinal column. From Leipzig he was called to Breslau as director of the medical clinic. About fifteen years ago, he again took up the work as director of the medical clinic in Leipzig. Strümpell is universally esteemed as an upright man, of noble character, and through his affable manner and kindly ways he has gained for himself a host of friends.

Marriages

William Defendorf Wolff, Rochester, N. Y., to Miss Minnie Durant Smith of Cleveland, at New York, June 30.

Willard Cole Rappleye, New Haven, Conn., to Miss Elizabeth Templeton Cunningham of Pine Orchard, July 20.

James Onslow Nolan, Kannapolis, N. C., to Miss Nellie Tyler Morris of Greensboro, at Burlington, June 20.

David Maurice Siperstein, Minneapolis, to Miss Helen Weingarten of New York, in June.

Jesse Robert Gerstley to Miss Adelaide Frances Kohn, both of Chicago, July 25.

James Ernest Stokes to Miss Rebecca Marsh, both of Salisbury, N. C., June 28.

Galn R. Wright, Newark, N. J., to Miss Ruth Anderson of Philadelphia, May 8.

Henry A. Herzer to Mrs. Ella Jacobs, both of Albion, Mich., July 10.

Elbyrn Grady Gill to Miss Ruth Meals, both of Roanoke, Va., June 16.

Deaths

William Wood Russell, Baltimore; University of Pennsylvania School of Medicine, 1890, Philadelphia; member of the Medical and Chirurgical Faculty of Maryland; and the American Gynecological Society; associate professor of clinical gynecology, Johns Hopkins University Medical Department; formerly on the staffs of the Johns Hopkins Hospital and the Hospital for the Women of Maryland; aged 57; died, July 11, at Santa Barbara, Calif.

Evander McNair McIver, Jonesboro, N. C.; University of North Carolina School of Medicine, Chapel Hill, 1908; member of the Medical Society of the State of North Carolina; served in the M. C., U. S. Army, during the World War; for four years county physician; member of the state legislature; aged 46; died, July 11, of acute nephritis.

Albert Novatus Blodgett, Boston; Medical School of Harvard University, Boston, 1871; member of the Massachusetts Medical Society; formerly superintendent of the Massachusetts Charitable Eye and Ear Infirmary and on the staff of the Massachusetts General Hospital; aged 75; died, July 3.

William Conrad Kessler, Philadelphia; Jefferson Medical College of Philadelphia, 1913; member of the Medical Society of the State of Pennsylvania and the American Urological Association; served in the M. C., U. S. Army, during the World War; aged 35; died, July 13, of appendicitis.

Caroline Stowe Merwin, Tsinanfu, China; Medical Department University of California, San Francisco, 1902; for eighteen years served as a medical missionary and head of the Louisa Y. Boyd Hospital, Tsinanfu; formerly a practitioner in Oakland, Calif.; aged 51; died, July 10.

Charles Edwin Beavers ● Barry, Ill.; Northwestern University Medical School, Chicago, 1899; served in the M. C., U. S. Army, during the World War; aged 55; died, July 18, at the Blessing Hospital, Quincy, of septicemia, following a carbuncle.

Bernard H. Webster, Rice Lake, Wis.; Hahnemann Medical College and Hospital, Chicago, 1886; member of the State Medical Society of Wisconsin; aged 60; died, July 1, at the Hahnemann Hospital, Chicago, of pericystitis and pulmonary edema.

Charles Leonidas Hoyle, Springhill, La.; Southern University Medical Department, Greensboro, 1874; formerly member of the state legislature; aged 73; died, June 30, at Warren, Ark., of paralysis.

William Samuel Shipp ● Battle Creek, Mich.; University of Michigan Medical School, Ann Arbor, 1903; past president of the Calhoun County Medical Society; aged 47; was shot and killed, July 25.

John Mordecai Anderson, Montgomery, Ala.; New York University Medical College, 1891; member of the Medical Association of the State of Alabama; aged 57; died, June 30, of pneumonia.

Charles Napoleon Brosius ● Shamokin Dam, Pa.; Medico-Chirurgical College of Philadelphia, 1907; served in the M. C., U. S. Army, during the World War; aged 45; died, July 16, of heart disease.

Oliver Gard, Frankfort, Ind.; Rush Medical College, Chicago, 1869; Civil War veteran; formerly mayor of Frankfort; aged 81; died, July 19, at the Methodist Episcopal Hospital, Indianapolis.

Judson Worthington Hastings, Feeding Hills, Mass.; Medical Department of Columbia College, New York, 1881; member of the Massachusetts Medical Society; aged 70; died, July 3.

Henry Sherry, Pasadena, Calif.; Chicago (Ill.) Homeopathic Medical College, 1880; College of Physicians and Surgeons, Chicago, 1890; aged 59; died, July 14, of influenza.

James Byard Wright, La Veta, Colo.; Louisville (Ky.) Medical College, 1892; member of the Colorado State Medical Society, aged 53; died, July 1, following a long illness.

Mary Ann Dearlove, Oak Park, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1888; aged 84; died, July 20, of embolism, following a fracture of the leg.

Anthony Joseph Strange, Independence, La.; Medical Department of the Tulane University of Louisiana, New Orleans, 1901; aged 41; died, May 2, of paresis.

● Indicates "Fellow" of the American Medical Association.

Axel Aberg ● Alamosa, Colo.; Denver and Gross College of Medicine Medical Department University of Denver, 1905; aged 60; died, June 7, of cerebral hemorrhage.

Joseph W. Studley, Marion, Ind.; Medical College of Indiana, Indianapolis, 1881; member of the Indiana State Medical Association; aged 72; died, July 21.

Isaac Newton Busby, Brooklyn, Iowa; Bennett College of Eclectic Medicine and Surgery, Chicago, 1887; Civil War veteran; aged 83; died, July 17, of senility.

Charles Melancthon Rhodes, Harrisburg, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1900; aged 51; died, July 12, following a long illness.

Abel Sutherland Holcomb, New York; Bellevue Hospital Medical College, New York, 1894; aged 56; died, July 16, at Saranac Lake, of tuberculosis.

Edwin Elmer Oder, Hammond, Ind.; Cincinnati (Ohio) College of Medicine and Surgery, 1877; aged 71; died, July 18, following a long illness.

Samuel Patton, Kingsport, Tenn.; Medical Department University of Tennessee, Memphis, 1882; aged 64; died, July 11, following an operation.

Purl Culver Plasterer, Hamilton, Ohio; American Medical College, Indianapolis, 1897; aged 54; died suddenly, July 14, of cerebral hemorrhage.

Frederick William Scheilhase, Evansville, Ind.; Homeopathic Medical College of Missouri, St. Louis, 1880; aged 81; died, June 1, of senility.

Frank Harris Durstine, Montclair, N. J.; University of Michigan Medical School, Ann Arbor, 1875; aged 75; died, July 13, of heart disease.

John Manley Cain, Calahan, N. C.; College of Physicians and Surgeons, Baltimore, 1879; aged 74; died, June 14, at a hospital in Statesville.

George Delos Kennedy ● Mandarin, Fla.; Michigan College of Medicine and Surgery, Detroit, 1904; aged 42; died suddenly, July 13.

Frank Bernhardt Fastabend, Chicago; College of Physicians and Surgeons, Chicago, 1905; aged 54; died, July 22, of heart disease.

Lora Coates Jackson Blackman, Brooklyn; Boston (Mass.) University School of Medicine, 1880; aged 67; died, May 12, of myocarditis.

George Edward Lemmer ● Danbury, Conn.; Bellevue Hospital Medical College, New York, 1885; aged 68; died, May 4, of pleurisy.

Edward B. Hobson, Jerseyville, Ill.; Rush Medical College, Chicago, 1867; aged 80; died, June 27, at Kansas City, Mo., of senility.

Z. D. Massey, Sevierville, Tenn. (licensed, Tennessee, 1889); formerly postmaster of Sevierville; aged 59; died, July 13.

George William May ● Cascade, Iowa; State University of Iowa College of Medicine, Iowa City, 1897; aged 57; died, July 9.

John Joseph Bell ● Harbour Creek, Pa.; College of Physicians and Surgeons, Baltimore, 1901; aged 54; died recently.

Stephen Clay Todd, Grand Rapids, Mich.; Eclectic Medical Institute, Cincinnati, 1868; aged 82; died, July 10, of senility.

Franklin H. Seiss ● Takoma Park, Md.; College of Physicians and Surgeons, Baltimore, 1880; aged 63; died, July 7.

John C. Urquhart, Los Angeles; L.R.C.P., Edinburgh, Scotland, 1882; aged 66; died, July 4, following a long illness.

Noah S. Kite, Pine Bluff, Ark.; Memphis (Tenn.) Hospital Medical College, 1886; aged 83; died, July 4, of senility.

Frederick George Phillimore, Boston (licensed, years of practice); aged 56; died, July 7, of heart disease.

Robert H. Calvert, South Bend, Ind.; Medical College of Ohio, Cincinnati, 1869; aged 73; died, July 18.

Joseph W. Trout, Dayton, Ohio (licensed, Ohio, 1896); aged 70; died, July 5, following a long illness.

William T. Gemmill, Forest, Ohio; Eclectic Medical Institute, Cincinnati, 1872; aged 73; died, July 3.

John H. Soothill, Santa Cruz, Calif.; Chicago (Ill.) Medical College, 1883; aged 62; died, July 12.

Frank E. Howald, Atlanta, Ga.; Eclectic Medical Institute, Cincinnati, 1885; aged 62; died, July 14.

Gustavus A. Gamble, Salt Lake City, Utah (licensed, Utah, 1907); aged 62; died recently.

The Propaganda for Reform

In This Department Appear Reports of The Journal's Bureau of Investigation, of the Council on Pharmacy and Chemistry and of the Association Laboratory, Together with Other General Material of an Informative Nature

DRUG AND "DRUGLESS" ADVERTISING

A Country Newspaper that Plays Both Ends Against the Middle

According to the mid-Victorian conception, the advertising pages of a newspaper were simply common carriers, open to any one who could pay the advertising rates and would furnish copy that would go through the mails. Most reputable newspapers of today concede at least a certain degree of moral responsibility for their advertising pages, the degree of responsibility varying with the standards of the paper.

Some "patent medicine" advertisements appearing in the same issues of the Mayville (Wis.) *News* that carried advertisements deprecating the use, and denying the value of drugs in general.

Some country newspapers, and a few metropolitan ones, are still living in the last century, so far as their advertising ethics are concerned. An interesting example has recently been brought to our attention. In the town of Mayville, Wis., there is published the Mayville *News*. A correspondent sends us pages from a few recent issues of this paper directing our attention to a number of small advertisements of the "reader" type common to the country paper. These consist of two or three line notices sprinkled in between items of local interest. The advertisements in question purport to be quotations from various sources deprecating the use of drugs and tending to give the impression that drugs in the treatment of disease are useless or harmful, or both. For example:

"A drug or substance can never be called a healer of disease."
"We dare not expect drugs to cure."
"Drugs, with the exception of two, are valueless as cures."

These are samples. Each alleged quotation is credited to some physician, known or unknown, and one might suppose that the information or misinformation was being published by the editor for the edification of the readers of his paper, if there were not the telltale "Adv." after each item. Of course, the source of these advertisements need not mystify those who are familiar with the devious methods of the "drugless healing" cults. The strong family likeness of these small advertisements to some of the material sent out by the advertising departments of some of the chiropractic "colleges" makes their origin fairly obvious. Whether the items in question are paid for by the local chiropractor—who openly patronizes the same paper—or are part of a general chiropractic advertising propaganda, the advertising department of the Mayville *News* doubtless knows.

The thing that appeals to one's risibilities, however, is the fact that on the same pages of the Mayville *News* where these statements derogatory to drugs are printed appear large and blatantly headed advertisements of the crudest of "patent medicines." The readers of the Mayville *News* are asked to believe that an 80-year-old gentleman whose stomach "would swell to nearly twice its normal size" was completely relieved by "Tanlac" (alcohol 18 per cent.), and that a Milwaukee cripple, after using the same preparation, was able to throw away his crutches. A distinguished citizen of Grassy Creek, N. C., assures the readers of the Mayville *News* that "Peruna [Alcohol 12 per cent.] is fine for colds, grippe and flu." Then there is the case of the lady from Greenville, Pa., who was having "hot flashes" and "was so nervous and weak that everything would get black." She is now able to do all her housework for a family of seven, due, we are told, to the recuperating properties of "Lydia Pinkham's Vegetable Compound (alcohol 15 per cent.)." Still another lady, this one from Kansas City, Mo., who was affected in much the same way and whose "doctor was frank enough" to tell her that he could do nothing more for her, "Tells Women of Middle Age what Lydia E. Pinkham's Vegetable Compound Did for Her."

The inhabitants of Mayville who have read in the *News* that they "dare not expect drugs to cure" will be surprised to learn from the same issue that "Bell-Ans" is a "sure relief for indigestion" while "Adlerika is excellent to guard against appendicitis." Having been led, by the Mayville *News*, to believe that drugs and combinations of drugs are useless they may decline to accept the pronouncements that "Hall's Catarrh Medicine" will positively "rid your system of catarrh or deafness or deafness caused by catarrh" and that "Othine" will remove freckles "under guarantee."

Evidently the publisher of the Mayville *News* does not expect his readers to take his advertisements seriously. One wonders if he, himself, keeps a straight face when he accepts money from certain of his advertisers.

Correspondence

CONTROL OF VENEREAL DISEASE

To the Editor:—In The Journal, July 14, appears an editorial on the control of venereal disease. As far as this relates to gonorrhea, there is one important phase which hitherto has lacked the consideration which its relation to the problem has warranted. I refer to the treatment of the all too common acute uncomplicated anterior urethritis in the male.

Considering how widespread gonorrhea is, that it is socially deplorable, morally objectionable and economically wasteful in times of peace, and that in times of war it is a serious menace to the success of military enterprise, one wonders at the almost complete absence of any earnest attempt to improve the generally accepted methods of treatment, which are far from efficient. Syphilis has attained scientific approval, and has thereby achieved some dignity; gonorrhea has not, and perhaps for this reason fails to evoke enthusiasm among those whose mental gifts and bent for originality would enable them to make valuable contributions.

But there is much that can be done while waiting for the laboratory to make the discovery that will stimulate renewed interest in the disease. The duty of setting the standard for adequate treatment and contributing to its progress devolves on the specialist in urology. This is a responsibility which he should not shirk or treat with contemptuous indifference

as being beneath his technical capacity or his more scientifically endowed knowledge. Otherwise the treatment becomes merely the performance of mechanical routine, devoid of productive thought and sterile in result.

While in programs for the control of venereal disease most stress is properly placed on immediate prevention, not enough consideration has been given to the infected individual. Now, if there were some well-planned, coordinated attempt to improve our present methods of treatment or evolve new and better ones, there might result an earlier elimination of the organisms and consequently of a possible focus for further dissemination. It would be quite analogous to the prompt control of contagious syphilitic lesions by the early administration of the arsphenamins.

What seems to be most necessary with the agencies at hand is that: 1. Urologists realize that gonorrhea, especially in its early stages, is the most urgent problem with which they have to deal. 2. They change their attitude toward it and give it the same conscientious consideration that is, say, at present allotted to the preoperative and postoperative care of the prostatic patient. 3. Those treating the disease who are not specialists follow them in this change of spirit and regard gonorrhea as a serious charge on their responsibility and not a pot-boiler. 4. The subject be more frequently presented in papers at gatherings. It is noteworthy that it seldom appears on urologic programs. With abundant material it is preeminently fit for clinical investigation. By ignoring it, urologists sacrifice one opportunity they have of rendering a service to public health.

MELVILLE SILVERBERG, M.D., San Francisco.

"ANOMALY OF THE APPENDIX"

To the Editor:—In the Cincinnati *Lancet-Clinic*, Dec. 23, 1911, I reported the case of an appendix similar to the one reported by Dr. Willour in THE JOURNAL, July 21, and in addition referred to another case taken from the *Australasian Medical Gazette*, July 20, 1911, as abstracted in THE JOURNAL, Sept. 16, 1911. In my own case, in addition to the appendix communicating with the bowel at both ends, the intervening loop of bowel had been caught under the appendix so as to produce partial obstruction.

A good many years ago I reported a case in which the appendix extended directly upward from the cecum, and attached itself to the gallbladder, and then perforated so that bile could pass directly from the gallbladder to the cecum. The bile ducts were normal and there was no way of determining how much bile passed through the new opening.

While on the subject of the appendix I might add that some years ago in making a hysterectomy I found the appendix packed full of fecal matter and removed it. Examination showed it to contain eleven full sized and fresh grape seeds. There was no evidence of any inflammatory trouble.

The most interesting, and possibly romantic, foreign body that I ever found in the appendix was in the person of a young woman. The foreign body was a hair from a man's mustache. The identity was promptly recognized by the patient, to whom I presented it as a souvenir.

J. F. BALDWIN, M.D., Columbus, Ohio.

Little Toe Reflex.—L. Poussepp reports in the *Presse médicale*, June 16, 1923, a new reflex in patients with lesions of the extrapyramidal tracts. It consists of a laterad movement of the little toe following slight excitation of the external border of the sole with the handle of the hammer. He found this reflex in cases of epidemic encephalitis, and also in two cases of cerebrospinal syphilis with ophthalmoplegia. In a patient with Babinski's sign, he noted the absence of this reflex, which he has found only in connection with symptoms of extrapyramidal lesions.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

REMOVAL OF TATTOO MARKS

To the Editor:—Would you be kind enough to give me some information on the removal of tattooing?

A. C. FARLINGER, M.D., New Liskeard, Ont.

ANSWER.—Answers to this question have been published in THE JOURNAL frequently. The principle of treatment of these marks is to excite an inflammatory process by means of chemical irritants so as to cause destruction of the superficial layers of the skin. Two methods have been devised, the method of Variot and the method of Brault.

Variot's plan of treatment, according to Brocq, is as follows: First, he places on the tattoo marks a concentrated solution of tannin, and tattoos this in. Then a silver nitrate pencil is rubbed vigorously over the surface until the surface becomes black from the formation of silver tannate in the superficial layers of the skin, and the surface is then washed with water. In the next few days a slight inflammatory reaction occurs, and over the surface treated a cloudy adherent dark crust forms. After the third or fourth day there is no pain except when there is movement of the muscles under a large crust. Occasionally there is a little suppuration under the crusts; but, if secondary infection is avoided, no severe inflammation occurs. After fourteen or sixteen days the crust comes off spontaneously, the corium and the epidermis underneath have been repaired, and the locality of the mark is recognizable only by a superficial pink cicatrix which gradually becomes of normal color. A couple of months after the operation, the scar is hardly noticeable.

Brault's method of removing tattoo marks consists in tattooing the region, previously rendered aseptic, with a solution of 30 parts of zinc chlorid to 40 parts of water. The needles with which the tattooing is done are dipped in this solution for the tattooing. If properly done, the resulting inflammation is slight, and after a few days there forms a superficial crust which remains about a week and then falls, leaving a slight, eventually almost imperceptible, scar. This method succeeds in a few cases, but requires skill and care in its application in order to obtain good results and to avoid suppuration and deep cicatrization.

COLLOID CALCIUM—"COLLOSOLS"

To the Editor:—Please inform me concerning colloidal calcium. I understand that it is used in England in the treatment of insanity with some success; also inform me how it is used, by the mouth or hypodermically. Any information you have will be appreciated.

R. A. R., M.D., W. Va.

ANSWER.—In the *British Medical Journal*, Jan. 14, 1922, E. E. Prest recommended a new "Collosol" brand of so-called colloidal calcium for the treatment of tuberculosis. In the *Lancet*, Nov. 4, 1922, T. C. Graves discusses "Colloidal Calcium in Malnutrition, Chronic Sepsis and Emotional Disturbances." Graves states in his article that his attention was called to a colloidal calcium preparation by Prest's article; "later at my suggestion Mr. J. F. Ward, B.Sc., Chief Chemist of the Crookes Laboratories, kindly prepared a colloidal form of calcium and lecithin." The publications of both Prest and Graves serve as uncritical endorsements of another addition to the Collosol preparations. Most of the Collosol preparations have been commented on unfavorably both by the Council on Pharmacy and Chemistry and by THE JOURNAL. As was pointed out by the Council and recently reaffirmed by the excellent work of Prof. A. J. Clark (*Brit. M. J.*, Feb. 17; April 28, May 12, 1923), some of the preparations were not true colloids at all! Thanks to the timely reports of warning of the Council on Pharmacy and Chemistry, the preparations are not being pushed in the United States, though they are being actively exploited in England.

As to the work of Graves on colloidal calcium: The conclusions reached concerning the beneficial action in the treatment of "Emotional Disturbances" do not seem justified by the character of the evidence he presents. Such results as he reports are common experiences without the use of medication. The metal calcium is, itself, so reactive that it is highly improbable that a colloidal form of it (as distinguished from the calcium salt) could exist in the presence of water; it was not surprising to note, therefore, that the preparations

used by Prest and by Graves were not colloidal "calcium," but *compounds of calcium*, the latter claimed to have been rendered colloidal. There is no basis either in theory or on evidence presented for administering a calcium salt in colloidal form; if advisable soluble compounds of calcium, such as the lactate and chlorid may be administered hypodermically. THE JOURNAL has stated ("Collosols"—British Colloids Limited, Queries and Minor Notes, March 4, 1922) that: "No scientific evidence has been presented to show that therapeutic values of water soluble drugs are enhanced by administration in colloidal form. It is true that in the case of certain insoluble substances—such as the metallic silver and its insoluble combinations—the fine state of subdivision inherent to the colloidal state may permit application for therapeutic measures and, therefore, may be of value." In his report to the British Medical Association, Clark says: "The pharmacological tests employed failed to show any marked difference between the action of the 'colloidal' preparations tested and the action of the same substances in true solution."

CHANGES IN NERVOUS SYSTEM IN DEMENTIA PRAECOX AND GENERAL PARALYSIS

To the Editor:—What have pathologists reported in regard to changes in neuroglia tissue in dissimilar conditions, say dementia praecox and paresis. ——— M.D.

ANSWER.—In dementia praecox the glia changes are not constant and are probably more closely related to the intercurrent conditions that cause death, such as tuberculosis and arteriosclerosis. In the more acute catatonic cases, satellitosis, cytoplasmic and even ameboid cell transformations have been described. Nerve cell destruction, however, is not obvious, and hence there are not many changes in the glia.

In general paralysis, on the other hand, ganglion cell destruction is extensive, and inflammatory changes are marked. The glia shows both progressive and regressive alterations—neuronophagy; cytoplasmic and ameboid transformations with numerous lipoid and other chemical substances in the cell bodies; and extensive fiber formation about the vessels and beneath the pia, etc.

Much has been written on the glia in the last few years, but apparently the only textbook that considers them exhaustively is in German (Spielmeyer, W.: Histopathologie des Nervensystems, Berlin, Julius Springer, 1923). Numerous articles have appeared in the various volumes of Nissl's "Histologische und histopathologische Arbeiten" since 1909. The following references are also of interest:

Gurd, A. E.: *Am. J. Insan.* **77**:201 (Oct.) 1920.
Fuller: *J. Nerv. & Ment. Dis.* **53**:457, 1921.
Hassin, G. B.: *Arch. Neurol. & Psychiat.* **3**:24 (July) 1919; **3**:130 (Feb.) 1920, and in other volumes.

TREATMENT OF PARALYSIS AGITANS

To the Editor:—I have been attending a man, aged 48 or 50, who is affected with a slow progressive type of paralysis agitans of five years' standing. Prior to the beginning of the symptoms, he had been in excellent health; but he had been laboring under considerable strain and responsibility in connection with charitable, educational and religious changes here. Parathyroid, electricity and other treatment have been given with no result. Calcium lactophosphate compound is what he is now taking. Sleeplessness and constipation are his most unpleasant symptoms; constipation has troubled him only within the last three or four months. Has pituitary extract been of any value in these cases? In the light of present speculation do arsphenamin, mercury, the iodids or the salicylates warrant attention in nonspecific cases? If present investigation has revealed any noteworthy treatment or cause of significant bidding, I will be very grateful for an expression from you on the subject. ———, M.D., Salem, Va.

ANSWER.—There is no remedy yet known that will arrest the degenerative type of paralysis agitans. In some of the cases due to epidemic encephalitis, the patients recover spontaneously, and some are reported as being relieved by arsphenamin. This drug, however, has no effect in the true Parkinson's disease. The endocrine preparations have been administered but without definite result. As palliative measures, warm baths, passive exercises and occupational therapy may help, though they must be watched as they may increase the rigidity. Scopolamin will often relieve the rigidity, and the pains and stiffness may sometimes be helped with acetphenetidin, acetylsalicylic acid, and drugs of that type. No one hypnotic can be recommended. The baths and occupation suggested may help. Morphin should be avoided, as the condition is chronic. Bromids, sulphonethylmethane, sulphonmethane and barbital, may be tried in various doses and combinations, care being taken to avoid cumulative effects and the formation of a habit.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

ALASKA: Juneau, September 4. Sec., Dr. Harry C. De Vighne, Juneau.
MASSACHUSETTS: Boston, September 11-13. Sec., Dr. Charles E. Prior, Room 144, State House, Boston.
NEW HAMPSHIRE: Concord, September 13-14. Sec., Dr. Charles Duncan, Concord.

THE TEACHING OF PHYSIOLOGY IN MEDICAL SCHOOLS*

SUTHERLAND SIMPSON, M.D., D.SC.
ITHACA, N. Y.

In two recent addresses,[1] the relation between the pure biologic sciences and their application to the practice of medicine is considered, criticisms of the teaching in the better medical schools are offered, and suggestions are made for its improvement. Both show evidence of that "healthy discontent without which there is no real progress."

Regarding the subject with which I am more immediately concerned, probably every teacher of physiology in a medical school is conscious of many of the defects pointed out, and is desirous of making his teaching as useful to the student and practitioner of medicine as possible; nevertheless, it is the business of the physiologist to teach physiology and that of the clinician to point out its clinical applications. The tendency to lay special emphasis on those sections of the subject which the clinician of the present day may regard as most important, to the exclusion, necessarily, of other sections, would, to a large extent, interfere with the advancement of the science of physiology and prevent the opening up of new fields. It is noteworthy that, in the past, investigations which the physicians of that time regarded as of only purely academic interest have subsequently led to revolutionary changes in the practice of medicine and surgery. The modern sciences of bacteriology and immunology, today of the utmost importance in surgery and medicine, are founded on the purely scientific work of the chemist Pasteur. The physiologist must keep in advance of the practical medical man, and should alone be the judge of what is important and what is not, in his own chosen field.

When all has been said, however, and while the great fundamental principles of the science and the facts on which they are based must be kept constantly in the foreground, if a choice of subject for illustration has to be made, no harm can come from making a selection which will have an application in the practice of medicine, if fundamental principles are not sacrificed.

After many years' experience, it is my conviction that the first consideration in the teaching of any subject is to arouse and keep alive the interest of the student. This can never be done by loading his mind with a mass of detail so as to get over the ground covered in the textbook. Beginners and the younger men are the chief sinners in this respect. The student should never be allowed to assimilate information without criticism; he should be taught, above all things, to look for evidence and assess its value. To quote from Lewis, "Do medical men show unusual discrimination when they come to weigh the pros and cons of a new problem? Are their explanations weighed in the critical spirit which their physiological teachers have tried to instil into them? Are they unusually acute in assessing the value of evidence? I do not answer these questions negatively, but lack the assur-

* From the Cornell University Medical College.
1. Bevan, A. D.: Revision of the Curriculum, abstr. J. A. M. A. **80**:779 (March 17) 1923. Lewis, Thomas: Relation of Physiology to Medicine, Brit. M. J. **1**:459 (Sept. 23) 1920.

ance to answer them affirmatively. If they are to be answered negatively, does it not mean that there is some weakness in physiological teaching, for physiology is the chief philosophical subject which they study? And may not this defect, if it exists, in part, at least, result because they learn to philosophize upon questions which are soon forgotten in the daily routine of practice?"

To be of lasting value, the information should be obtained at first hand, and a spirit of searching criticism should be inculcated. For medical men, in particular, it is dangerous to build theories on insecure foundations. "Medicine owes no debt of gratitude to those who teach her theories without proof."

AN ILLUSTRATIVE EXPERIMENT

With this preamble, it may not be out of place to describe a type of experiment which may be of great value to a medical student taking physiology in his freshman year, and which can be carried out with no great trouble and without any elaborate apparatus or preparation. The number of entering students admitted to this division of Cornell University Medical College is limited to thirty. In physiology, for mammalian work, the class is divided into five groups of six each, under a leader who is one of the students chosen by the other members of the group and not on the instructing staff. This leader is responsible to the teacher for the conduct of the group.

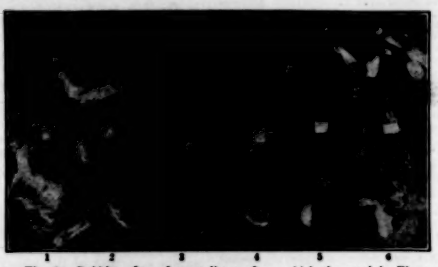
In the section of endocrinology, the following experiment is performed to demonstrate the intimate relationship between the uterus and ovaries. To take the year 1921 as a concrete example, five female rabbits of the same litter, born January 22, were used. Four had both ovaries removed, and the fifth was kept as a control. As we did not have a litter which contained six females, Group 3 used one of another litter born January 1, that is, three weeks earlier than the first. After double ovariectomy, March 2, the one litter being thirty-nine days old and the other sixty, the animals that had been operated on were kept in the same pen along with the control, and under exactly the same conditions as regards feeding and attention. They were weighed once a week, and the weights in grams were plotted to show the rates of growth.

June 7, ninety-seven days after the ovaries had been removed, the animals were killed by chloroform, the uterus and the vagina to the point at which it is joined by the urethra were carefully dissected out, and all were photographed side by side, in the same order as the rabbits from which they had been removed. They were labeled in numerical order from left to right, the sixth being the control. This is a clear demonstration of the profound influence which the normal ovary exerts on the uterus, and it is obtained by the student himself at first hand. In other years, unilateral ovariectomy has been performed on one or two of the rabbits, and bilateral on the others.

The experiment was carried out entirely by the students themselves. As preliminary preparations, I, with the help of the group leaders, removed both ovaries from a young rabbit, as a demonstration. This is not shown in the illustration.

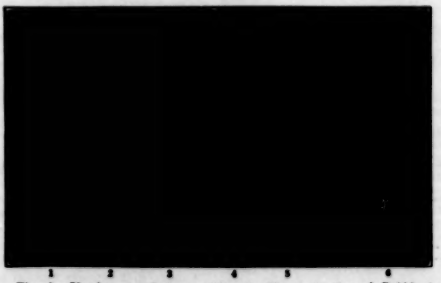
For the actual operation, the instruments were sterilized by boiling, the animal was anesthetized by ether, the hair was removed from the abdomen by a solution of sodium sulphid, and the skin cleansed with soap and water and disinfected with tincture of iodin. The animal was covered by sterilized gauze, through which the skin incision was made.

After removal of the ovaries, the opening was closed with horsehair sutures, and the wound was painted with iodin. The whole proceeding was carried out under the direction of the instructor, who, however took no actual part in the operation. Recovery was rapid, and in no case did the wound become infected. All the animals lived, and remained healthy until killed by chloroform.



1 2 3 4 5 6

Fig. 1.—Rabbits—five of same litter—from which the uteri in Figure 2 were removed, June 7, 1921, ninety-seven days after double ovariectomy: Rabbit 3 is 3 weeks older than the others; Rabbit 6 is the normal control.



1 2 3 4 5 6

Fig. 2.—Uteri removed from rabbits in Figure 1: that of Rabbit 3 is considerably larger than those of the others, and that of Rabbit 6, the control, much larger.

EFFECT OF SUCH AN EXPERIMENT

An experiment of this kind is followed with the keenest interest by the student, and a spirit of emulation among the groups is encouraged. The importance of cleanliness in a surgical operation and of care in the administration of an anesthetic is learned. The student is made to feel a personal responsibility in the progress of the case and in the final result. No matter whether he is destined to be a medical practitioner or a teacher and investigator, such an experiment will appeal to him.

Stimson Hall.

California February Examination

Dr. Charles B. Pinkham, secretary, California Board of Medical Examiners, reports the written and oral examination held at Los Angeles, Feb. 12-15, 1923. The examination covered 9 subjects and included 90 questions. An average of 75 per cent. was required to pass. Of the 34 candidates examined, 17 passed and 17 failed. Of the twenty-one candidates who took the drugless practitioners' examination, 7 passed and 14 failed. One candidate was granted a license to practice as a midwife, and 2 candidates were licensed as chiropodists. One hundred and nineteen candidates were licensed by reciprocity. One candidate received an osteopathic license by reciprocity, and one candidate a chiropodist license by reciprocity. Eleven candidates were licensed on government credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Stanford University	(1922)	82.1, 87.3,	88.7
University of Colorado	(1922)	87.7,	89
Northwestern University Medical School	(1921)		83.7
Rush Medical College	(1922)	86.6,	90.6

University of Illinois	(1922)	80.4
Harvard University	(1922)	88.8
University of Michigan Medical School	(1921),* (1922)	87.2
University of Minnesota Medical School	(1922)‡	83.8
University of Pennsylvania	(1921) 91, (1922)	82.6
McGill University	(1922)	83.7
University of Berlin, Germany	(1922)†	75.7

FAILED

Denver College of Medicine	(1895)	69
Chicago Homeopathic Medical College	(1891)	60
Hahnemann Med. Coll. and Hosp. of Chicago	(1892) 67, (1897)	66
University of Louisville	(1891)	60
Baltimore Medical College	(1898)	58
Detroit College of Medicine	(1898)	60
Barnes Medical College	(1896)	56
University Medical College, Kansas City, Mo.	(1892)	50
University of Nebraska College of Medicine	(1903)	65
Albany Medical College	(1881)	72
Medical College of Ohio	(1887) 66, (1894)	49
Aichi Prefecture Special Med. Sch., Nagoya, Japan	(1921)†	59.3
Kumamoto Special Medical School, Japan	(1921)†	41.8
University of Kharkov, Russia	(1917)†	66.3
University of Tomsk, Siberia, Russia	(1911)†	64.1

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Alabama		(1917)	Alabama
University of California		(1920)	Mass.
Stanford University	(1916) New York, (1917, 2)		Hawaii
Gross Medical College		(1895)	Washington
University of Colorado		(1916)	Illinois
George Washington University		(1908)	Illinois
Howard University		(1919)	Alabama
Emory University		(1921)	Florida
Chicago College of Medicine and Surgery		(1916)	Illinois
College of Physicians and Surgeons, Chicago	(1894), (1899) (1902) Washington, (1905, 2), (1906), (1907, 3) Illinois		Wisconsin
Hahnemann Med. Coll. and Hosp. of Chicago		(1912)	Illinois
Harvey Medical College		(1898)	Illinois
Illinois Medical College		(1905)	Illinois
Northwestern University Medical School	(1906, 2) (1908) Montana, (1910), (1911) Illinois, (1910) Oklahoma		Iowa
Rush Medical College	(1882) Iowa, (1889) (1897), (1905), (1916) Illinois		Washington
University of Illinois		(1913)	Illinois
College of Physicians and Surgeons, Keokuk		(1896)	Illinois
Keokuk Medical College		(1898)	Illinois
Keokuk Med. College, College of Phys. and Surgs.	(1903) (1907) South Dakota		Kansas
State University of Iowa College of Medicine	(1893) (1904), (1918) Iowa		S. Dakota
Louisville Medical College		(1902)	S. Carolina
Southwestern Homeopathic Med. Coll. and Hosp.		(1905)	Colorado
University of Louisville	(1907) Utah, (1915)		Kentucky
Flint Medical College of New Orleans		(1903)	Louisiana
Baltimore Medical College		(1901)	W. Virginia
College of Physicians and Surgeons of Baltimore		(1911)	Montana
Johns Hopkins University		(1918)	Maryland
Harvard University		(1902)	Iowa
Tufts College Medical School		(1920)	Mass.
Detroit College of Medicine	(1889) Montana, (1908)		Michigan
Hamline University		(1904)	N. Dakota
University of Minnesota Med. Sch.	(1909), (1915), (1922)		Minnesota
Barnes Med. Coll.	(1900) Iowa, (1908) Idaho, (1911)		Missouri
Ensworth Medical College		(1906)	Kansas
Homeopathic Medical College of Missouri		(1889)	New York
Missouri Medical College	(1895) Washington, (1899)		Missouri
St. Louis College of Physicians and Surgeons	(1904) (1906) Idaho, (1920) Colorado		Illinois
St. Louis University School of Medicine		(1904)	Illinois
University Medical College, Kansas City, Mo.		(1905)	Missouri
Washington University Medical Department	(1908) Missouri, (1912) Arizona	(1901)	Oklahoma
John A. Creighton Medical College		(1896)	Nebraska
Lincoln Medical College	(1900), (1901)		Nebraska
Omaha Medical College		(1894)	Iowa
University of Nebraska	(1919), (1921)		Nebraska
Columbia University Coll. of Phys. and Surgs.	(1895) (1903) New York		New Hamp.
New York Homeo. Med. Coll. and Flower Hospital	(1869) (1906) Ohio		New York
University of Buffalo		(1904)	Utah
Leonard Medical School		(1904)	W. Virginia
Cleveland Homeopathic Med. College	(1904), (1905)		Ohio
Eclectic Medical College		(1903)	Nebraska
Starling Medical College		(1893)	S. Dakota
Cleveland College of Physicians and Surgeons		(1894)	Kansas
University of Oregon		(1917)	Oregon
Jefferson Medical Coll. of Philadelphia	(1906), (1912) (1912) Iowa		Washington
Medico-Chirurgical College of Philadelphia		(1916)	Oregon
University of Pennsylvania	(1913) Hawaii, (1921)		Texas
University of Pittsburgh		(1918)	Penna.
Western Pennsylvania Medical College		(1900)	Penna.
Mehrtry Medical College	(1905) Georgia, (1911) (1913) Tennessee, (1915) Mississippi		Texas
Memphis Hospital Medical College	(1903) Arkansas, (1910)		Montana
Sewanee Medical College		(1894)	Indiana
Vanderbilt University	(1900) Tennessee, (1913)		Kentucky
University of Vermont College of Medicine		(1913)	R. Island
Milwaukee Medical College		(1904)	Wisconsin
McGill University		(1900)	Iowa
Queen's University Faculty of Medicine	(1893) (1899) Minnesota, (1904) Indiana		N. Dakota
Trinity Medical College		(1897)	Washington
University of Toronto	(1905) Washington, (1908)		N. Dakota
National University, Athens, Greece		(1913)†	Illinois
Chiba Special Medical School, Japan		(1918)†	Nevada

ENDORSEMENT OF CREDENTIALS

College	Year Grad.	Endorsement with
Columbian University	(1897), (1901)	U. S. Army
Georgetown University	(1914)	U. S. Army
Louisville Medical College	(1897)	U. S. Army
University of Maryland School of Medicine	(1908)	U. S. Army
Harvard University	(1900) U. S. Navy, (1913)	U. S. Army
Tufts College Medical School	(1914)	U. S. Army
St. Louis University School of Medicine	(1904)	U. S. Army
Jefferson Medical College of Philadelphia	(1914)	U. S. Army
University of Vermont	(1910)	U. S. Army

* No grade given.

† Graduation not verified.

‡ This candidate has finished his medical course and will receive the M.D. degree on completion of a year's internship in a hospital.

§ This candidate has finished his medical course and received an M.B. degree and will receive the M.D. degree on completion of a year's internship in a hospital.

Book Notices

THE STORY OF MAN AND WOMAN. A Study of the Sexual Relation in This Life and the Life to Come: Its Physiology, Psychology, Morals and Tuecology. By David P. Jackson, M.D. Cloth. Price, $2. Pp. 252. Philadelphia: Dorrance & Co., Inc., 1923.

This unusual volume presents a strange conglomeration of scientific fact regarding sex, of scriptural quotation regarding the relation of man and woman and of opinion and theory not supported by scientific evidence. It begins with a careful study of the lives of Adam and Eve as reported in the scriptures, accepting life in the Garden of Eden as fact and citing Alexis Carrel's experiment with the growth of cells as evidence to prove it. This plan is generally followed throughout the book. The author cites legendary belief or opinion, and then attempts to justify it by modern scientific fact, frequently stretching interpretations greatly. In the process, the whole plan of the book reaches its ultimate fallacy in the final chapters describing "Paradise Restored," in which the author paints a picture of the typical heaven of the evangelists, and describes marital conditions as they will there exist. Although presumably serious, the book is unequaled as humorous literature.

ENLARGEMENT OF THE PROSTATE. Its History, Anatomy, Etiology, Pathology, Clinical Causes, Symptoms, Diagnosis, Prognosis, Treatment; Technique of Operations, and After-Treatment. By John B. Deaver, M.D., LL.D., Sc.D., John Rea Barton Professor of Surgery, University of Pennsylvania, Assisted by Leon Herman, B.S., M.D., Urologist to the Methodist Episcopal Hospital, Philadelphia. Second edition. Cloth. Price, $7. Pp. 358, with 142 illustrations. Philadelphia: P. Blakiston's Son & Co., 1922.

A monograph has the advantage of being able to devote more space to the discussion of a special subject than is possible in a textbook or a system. In the present volume, the use of diagrams would have saved much superfluous description, especially in the chapters on embryology, anatomy, pathology and the methods of examination. In the first named, there is only brief reference to the work of Lowsley, which has greatly changed the views of the majority of urologists as to the development of the prostate. The space devoted to comparative anatomy could be better assigned to a more detailed description of the various forms of prostatic enlargement, and more illustrations of drawings of specimens and of cystoscopic views from the very large material at the disposal of the authors. There is no reference to the recent studies of Tandler and Zuckerkandl on the two principal types; namely, an intravesical and a subvesical form of protrusion. The division into prostates in which (*a*) the adenomatous element and (*b*) the fibrous tissues, respectively, predominate is commendable, because this is not well understood by many. The same is true of those cases in which one finds only hyperplasia of the muscular and fibrous elements, sufficient to cause clinical symptoms, but disappointing as to findings at operation. The discussion of enlargements of the subcervical glands and of median bars is abreast of present views, but here again one would expect more illustrations of such conditions in a monograph on a special subject. One can warmly endorse the recommendation to search for diverticula of the bladder during cystoscopy, which should be done at some stage in every case before operation. The value of cystograms in determining the size and number of such diverticula is emphasized; but here, again, one has the right to

expect a few typical roentgenograms of this complication. The importance of recognizing the presence of diverticula and perhaps removing them in order to improve the number of good end-results is not sufficiently dwelt on. In view of the rapid development of blood chemistry in relation to the prognosis and treatment of prostatic enlargement, the section devoted to this subject seems inadequate. The now almost obsolete method of determining the size of the prostate by combined rectal and intravesical (sound) examination could well be omitted. The value and necessity of routine roentgenray examination of the upper third of the femora, of the pelvis and lower spine for metastases of a possible malignant prostate, as Bumpus has shown, should be included in future editions. One is greatly impressed by the masterly analysis of causes of primary mortality, especially in view of the large experience of the authors, whose treatise is based on the study of 372 perineal and 814 suprapubic prostatectomies. The prophylactic treatment of cases in which there are recurrent attacks of epididymitis due to a badly infected bladder, by ligation of the vasa deferentia, can be warmly endorsed. In the discussion of preoperative and postoperative complications, one misses a more detailed description of the more recent methods of gradual decompression of the overdistended bladder. The frequency with which a diaphragm forms between the prostatic bed and the bladder after operation so that a bilocular copdition follows should be more fully dwelt on. The same is true of infected diverticula whose persistence may be the cause of a pyuria which does not disappear until the diverticulum is removed. The great strides made in the study of the newer urinary antiseptics will undoubtedly lead to their inclusion in a future edition. The authors believe that there is a field for perineal prostatectomy, and that the hard, fibrous prostate is more easily enucleated by this route. They also hold that the removal of median bars or operations for the relief of the contractions of the vesical neck should be performed by the suprapubic route. The remaining chapters are devoted to the technic of operations, and here the large experience of the authors is of great assistance in elucidating the steps of the various operations. The methods of other surgeons are presented in an impartial manner.

DIE KRANKHEITEN DES HERZENS UND DER GEFAESSE. Ein kurzgefasstes, praktisches Lehrbuch. Von Dr. Heinrich Hochhaus, Geh. Med.-Rat, Professor a. d. Akademie f. Praktische Medizin. Bearbeitet und Herausgegeben von Dr. G. Liebermeister, Leit. Arzt der Inneren Abteilung des Städt. Krankenhauses Düren. Paper. $2. Pp. 313, with 72 illustrations. Berlin: Julius Springer, 1922.

This is a brief textbook with many good features, but so sketchy in character that it will be of little help to either student or practitioner. Many topics are scantily touched on, and with facts far from up to date. We may cite as examples heart block, auricular fibrillation, acute infarction of the myocardium, subacute infectious endocarditis (endocarditis lenta). The volume will in no sense take the place of the larger German works, such as Romberg's, on diseases of the heart.

THE HEALTH SPEAKER'S HANDBOOK. By Iago Galdston, M.D. Paper. Pp. 51. New York: The New York Tuberculosis Association, Inc., 1923.

This brief manual on health education from the lecture platform sets forth Dr. Galdston's crystallized experiences gained in service as a speaker on health subjects. The author calls attention to the need for more extensive public health education, and emphasizes the fact that teaching by the spoken word is the oldest and most effective, as well as the most intricate and difficult, method. Not all who talk can teach, but to teach should be the chief aim of health talks. Under the heading of the speaker is discussed that indefinable something called personality; then the voice, vocabulary, knowledge and training, all in some detail. The subject matter, the audience, suggestion for preparation and delivery of health talks, and finally the adjuncts to the lecture, such as the distribution of literature and use of motion pictures, are discussed with a special section on talks to industrial workers. Illustrative outlines are presented of a series of talks to various groups, one to printers, one to physicians, and another to mothers. The rapid development of the radio has enormously increased the domain of public speaking. Health talks have become a daily feature of many of the broadcasting stations. To those who have occasion to make health talks through this medium or in person, this brief manual presents many helpful suggestions.

FOIE & PANCRÉAS. Par J. Castaigne, M. Brulé, H. Garban, Noël Fiessinger, G. Farey. Second edition. Paper. Pp. 522, with 40 illustrations. Paris: A. Maloine et Fils, 1923.

This is, indeed, worthy of a place in the system of medicine and therapy published under the direction of Emile Sergent, L. Ribadeu Dumas, and L. Babenneix. It is characteristic of the modern tendency of French works to include almost exclusively a French bibliography. As a result, the important recent contributions of Eppinger, Brugsch and others in the study of icterus are unfortunately omitted. The work otherwise is quite complete, furnishing to the clinician as well as to the research worker the essence of what is known concerning diseases of the liver and pancreas. In addition to the exposition of that which has already been accomplished and accepted, many interesting original observations and theories are offered. Prognosis and therapy are not neglected. Such fantastic statements as "Xanthoma is an indication of cholesterinemia, making one think of cholelithiasis, and constitutes for gallstones what the tophus does for gout" are frequent. The value of many liver function tests, long since abandoned in this country, is emphasized in the diagnosis and prognosis of liver disease. Those who are interested in the much discussed dissociated icterus will find an excellent and complete description. The recent work on picric acid icterus is also dealt with. Physical diagnosis of both liver and pancreas is completely gone into. As the book was written before the advent of insulin, this phase of pancreatic pathology and therapy could not be discussed by M. Farey in his thorough treatise on the pancreas. The work is recommended to those who desire a complete survey of the knowledge concerning diseases of the liver and pancreas as represented by the modern French school.

THE PATHOLOGICAL PHYSIOLOGY OF SURGICAL DISEASES. A Basis for Diagnosis and Treatment of Surgical Affections. By Professor Dr. Franz Rost, University of Heidelberg. Authorized Translation by Stanley P. Reimann, M.D., with a foreword by John B. Deaver, M.D., LL.D., Sc.D. Cloth. Price, $6. Pp. 535. Philadelphia: P. Blakiston's Son & Co., 1923.

This is an unusually interesting book. Essentially surgical in its point of view, it is the work of a surgeon who is a trained biologist. This, in itself, would promise a useful and direct treatment of physiologic problems, and augur well for the selection and emphasis of such problems as commonly confront the observing surgeon and internist. The material is taken up in chapters devoted to the gastro-intestinal tract and its appendages, the spleen, the peritoneum, the urogenital apparatus, the hypophysis and the thyroid, the chest cavity, the central nervous system and the extremities. The difficulty of properly developing a great number of established facts and complex theories into an organic and compact treatise without confusing the reader or overwhelming him in a maze of detail is obvious. But because of his grasp of the subject, Rost has succeeded in making the book readable and in keeping the focus of his argument clear and sharp. He has done this, too, without ever becoming superficial. The translation leaves nothing to be desired. The book should be of great value not only to the surgeon but also to the internist and to the pathologist.

OEUVRES DE PASTEUR. Réunies par Pasteur Vallery-Radot, Médicin des Hôpitaux de Paris. Paper. Tome Premier: Dissymétrie Moléculaire. Price, 50 francs, net. Pp. 480, with illustrations. Tome II: Fermentations et Générations dites Spontanées. Price, 65 francs net. Pp. 644, with illustrations. Paris: Masson et Cie, 1922.

The publication in five stately volumes of Pasteur's collected works, rather long delayed, is another noteworthy tribute on the occasion of the centennial of his birth. It is altogether appropriate that the editor is Pasteur's grandson and the son of Pasteur's biographer. It may be permitted to say that Pasteur is fortunate in his biographer and in his editor. The editorial work, the paper, the form and the

craftmanship are worthy of the contents. Pasteur's works ought to be in every medical and scientific library of any consequence in order that his epochal contributions to crystallography, fermentation, infection and immunity may be referred to and studied without inconvenience by students of the present and coming generation.

Medicolegal

Courts May Require Submission to Taking of Roentgenograms—Expert Testimony

(Von Hosse v. Canadian Northern Ry. Co. et al. (Minn.), 192 N. W. R. 493)

The Supreme Court of Minnesota, in affirming a judgment for $3,000 damages in favor of the plaintiff for injuries alleged to have been sustained while alighting from a train, says that the nature and extent of her injuries were important issues. About three months after her injury, she was taken in an automobile to Warren, Minn., where she was examined by a physician who subsequently gave testimony in her behalf. In connection with the examination, roentgenograms were taken of the lower portion of her spine. Basing his testimony in part on the showing made by the roentgenograms, the physician gave it as his opinion that the plaintiff had sustained a compressive fracture of the fifth lumbar vertebra and, as a consequence, would suffer more or less pain for the remainder of her life. In the course of his cross-examination, he was asked to produce the plates, and answered that he had left them at Warren, 150 miles more or less from the place of trial. Complaint was made because the trial court denied the defendants' motion for a continuance until the plates could be obtained and examined by the defendants' medical experts, and their subsequent request that the plaintiff be required to go to the office of a local physician to have another roentgenogram taken. The supreme court does not think that there was an abuse of discretion in the denial of the motion for a continuance.

Whether the court should have required the plaintiff to submit to the taking of another roentgenogram was a question not free from doubt. There is little authority on the subject. Such as the supreme court has found is to the effect that trial courts have broad discretionary powers in this regard. At the instance of the defendants, the plaintiff had been requested to submit and had submitted to a physical examination by four physicians, two of whom testified in her behalf and two in the defendants' behalf. None of them said that they were unable to form an opinion as to the nature or extent of her injuries without a roentgen-ray examination. Undoubtedly, they would have had a better foundation for their opinions if they had seen roentgen-ray plates. It was within the power of the court to grant the defendants' request, for it is a matter of common knowledge that the art of taking roentgen-ray photographs has been so developed that danger or serious inconvenience to the patient no longer attends their taking. But it does not follow that a court has no discretion on such a request. Under all the circumstances, the supreme court cannot say that there was an abuse of discretion in the denial of the request.

Two physicians who had examined the plaintiff were asked to give their opinion as to whether her story of her ailment or the symptoms of injury she manifested were feigned or real, and answered that they believed the pain of which she complained was real. They had testified that they found a point of marked tenderness low on the spine, but no external evidence of injury. The defendants insisted that, when there are no marks of injury, it is error to permit a physician to express an opinion as to the genuineness of a patient's complaints of pain. There was testimony that the plaintiff winced whenever pressure was applied at a certain point over her spine. In a minor degree, this was an involuntary manifestation of pain, and it was competent for the physicians to express an opinion as to whether the pain was real or pretended.

When instructing the jury on the subject of damages, the trial court said that the testimony given by the physicians was "entitled to considerable weight." The defendants insisted that this was error. It is to be noted that the instruction applied to the physicians who testified for the plaintiff as well as to the defendants' physicians, so it would seem that, if there was error, it was neutralized. However, it was immediately followed by the statement that when the physicians disagree the jury must determine for itself the value of the testimony, and by a further instruction that the extent of the plaintiff's injuries should be determined by the consideration of all the testimony, and not that of the physicians only. The charge as a whole was not open to serious criticism.

Care Required in Paroling Insane Persons

(Austin W. Jones Co. v. State (Me.), 119 Atl. R. 577)

The Supreme Judicial Court of Maine, in overruling exceptions to a verdict in favor of the plaintiff, says that on May 9, 1920, certain buildings and personal property owned by the plaintiff were destroyed by a fire which, it was contended, was kindled by a man who had been a patient at a state hospital for the insane. This action against the state for damages was authorized by a legislative resolve which provided: "The liabilities of the parties shall be the same as the liabilities between individuals." By the express legislation in this case, the state laid aside the protecting shield furnished by the common law, and entered this contest on the same terms of respondeat superior (let the superior, or master, answer) as would govern if the state were a private individual. It appeared that the patient had been committed to the hospital, Feb. 15, 1920; that his psychosis was dementia praecox, paranoid type; and that, under date of April 25, 1920, he was paroled into his mother's custody, by the superintendent of the hospital. It appeared, too, that the man had delusions of persecution.

Was the superintendent of the hospital negligent in granting parole under these conditions? In other words, did he fail to observe that degree of care which the law requires for the protection of the interests likely to be injuriously affected by the want of it? It should not require argument or citation of legal authorities to prove the necessity and propriety of the various methods provided by law to protect both the afflicted person and the community at large from the ill effects of insanity. Among those methods is that of restraint by lawful commitment to a hospital provided for the custody and treatment of the insane. While the statute law of Maine provides that the superintendent of a hospital for the insane may permit any inmate to leave the institution temporarily in charge of his guardian, relative or friend, or even by himself, for a period not exceeding six months, yet reason and good sense demand that such permission should not be given if the safety and welfare of the patient, or the community at large, are to be jeopardized by such permission. And it equally follows that the degree of care to be exercised in giving such permission should be commensurate with the particular nature of the patient's mental affliction and the possible or proportionate risk consequent on his enlargement.

It would be unprofitable, and perhaps invidious, to discuss the professional opinions of the distinguished medical men who testified at the trial. From their testimony, and from all the testimony in the case, the jury passed on the issue of negligence. There was evidence, if credible to the minds of the jury, to sustain the view that this patient was a dangerous man to be at large; and that a reasonably prudent man, possessing the learning, and having had the experience, which were possessed and had by the superintendent of the hospital, would not have paroled the man after so short a term of confinement, when he was suffering from a mental ailment which made him a dangerous man to be at large, and without more critical and careful examination of the patient's condition at the very time when the parole was granted. Parole under these circumstances must be regarded as an abuse of discretion. To be sure, it was the verdict of laymen on the question largely affected by professional learning, but it was a question of fact to be determined by a jury, under the judicial procedure of this state, and this court is not convinced that the finding should be disturbed by the court.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Atlantic Medical Journal, Harrisburg, Pa.

92: 501-574 (May) 1923

Specialism and Cooperation. G. E. De Schweinitz, Philadelphia.—p. 501.
What Types of Goiter Should Receive Medical Treatment. D. Guthrie, Sayre, Pa.—p. 506.
Surgical Treatment of Goiter. H. L. Foss, Danville, Pa.—p. 508.
Roentgen-Ray and Radium Treatment of Goiter. G. W. Grier, Pittsburgh.—p. 516.
Differential Diagnosis of Diseases of Pancreas. G. E. Holtzapple, York, Pa.—p. 523.
Etiology of Uveitis. B. Chance, Philadelphia.—p. 528.
Practical Points on Cataract Extraction. J. B. Corser, Scranton, Pa.—p. 536.
Diabetes and Life Insurance. H. J. John, Cleveland.—p. 539.
*Ophthalmia Neonatorum. L. Lehrfeld, Philadelphia.—p. 543.

Statistics on Ophthalmia Neonatorum.—Of forty-nine cases of ophthalmia neonatorum traced by Lehrfeld, two resulted in complete blindness in both eyes, one in partial blindness of the right eye, two in disturbance of vision, as evidenced by small maculations in the left eye, and one case of the same degree in both eyes. Further study of these forty-nine cases showed that six were really not cases of ophthalmia neonatorum since they occurred in persons at the ages of 1 year, 2 years, 5 years, 8 years, 9 years and 25 years. A startling fact is that a prophylactic was used in only twenty instances out of thirty-five in 1920, and in twenty-two instances out of thirty-three in 1921. If such omission occurs among the actual gonorrheal cases, there must necessarily be a large number of babies born annually who do not receive this all important prophylactic treatment.

American Journal of Diseases of Children, Chicago

25: 339-410 (May) 1923

*Critique of Pirquet Feeding System. H. K. Faber, San Francisco.—p. 339.
*Mongolism in One of Twins and Etiology of Mongolism. T. Halbertsma, Haarlem, Holland.—p. 350.
*Ulcerative Stomatitis and Its Treatment by Intravenous Injection of Arsenic. E. A. Morgan, Toronto.—p. 354.
*Treatment of Vascular Nevi with Radium. R. H. Rulison and S. McLean, New York.—p. 359.
Atresia of Duodenum and Right Internal Hernia. Report of Case. J. J. Morton, New Haven, Conn.—p. 371.
Myelogenous Chloroma. Report of Case, with Necropsy. N. C. Foot and G. Jones, Cincinnati.—p. 379.
Schick Test Performed on More Than 150,000 Children in Public and Parochial Schools in New York (Manhattan and Bronx). A. Zingher, New York.—p. 392.
Water Content of Infants' Blood During Periods of Rapid Increase in Weight. H. Bakwin, New York.—p. 406.

Criticism of Pirquet Feeding System.—Faber maintains that practical and theoretical reasons both militate against the general adoption of the Pirquet system of feeding. The sitting height on which it is based cannot be measured with sufficient accuracy, and even slight errors in this measurement lead to serious errors in calculating the nutritional status of the individual and his food requirements. The Pirquet index of nutrition has a misleading resemblance to a percentage of normal weight, into which it cannot readily be translated. The Pirquet theory that sitting height and intestinal area are in close correspondence is neither susceptible of proof nor consonant with probability. Its corollary, that sitting height and food requirements bear a relationship to each other, while based on false premises, is probably true, but depends for its validity on the fact that sitting height and body surface show a certain degree of correlation. This correlation is not close enough to permit the accurate calculation of body surface from sitting height. Finally, the introduction of Pirquet's food unit, the nem, to supplant the calory is highly undesirable, largely for practical reasons, and presents no advantages that would appeal to the American public.

Etiology of Mongolism.—The conclusion that mongolism is germinal in origin is deduced by Halbertsma from the fact that mongolism occurs in one of twins. An examination of these cases reveals that all have resulted from a two-egg pregnancy. Cases of mongolism in both twins of different sex are unknown; of like sex, there are cases described; this is in accordance with the theory that mongolism must be regarded as the result of defects inherent in the germ plasm.

Ulcerative Stomatitis Treated by Intravenous Injection of Arsenic.—While the local application to the gums of Bowman's solution, which consists of a solution of potassium arsenite, 12 c.c.; wine of ipecac, 12 c.c., and glycerin, 8 c.c., was effective, the relief was not always permanent. It seemed reasonable to Morgan to assume that arsenic administered intravenously would be more apt to reach these deep foci and thus effect a more lasting cure. Twenty-five cases were treated in this manner and the results have always been satisfactory. In eight cases Bowman's solution was used locally in conjunction with an intravenous injection of an arsenical salt such as neo-arsphenamin. Improvement was marked in from two to four days, and cure was effected on an average of five and three-fourths days. In seventeen cases no treatment was used other than the intravenous injection. Improvement was noted on an average two and one-half days after injection, and complete cure was recorded on an average of five and three-eighths days. One child that had been treated for eighteen days with local applications of Bowman's solution without visible improvement was completely cured eight days after intravenous medication was given.

Radium Therapy of Vascular Nevi.—Rulison and McLean state that not all angiomas respond equally well to radium treatment. The port wine mark is very obstinate, since the flat nevi generally are more refractory than the raised. Many nevi of small size situated on covered parts are easily destroyed by more rapid methods. The scar following the skilful use of carbon dioxid snow is often insignificant. Telangectasis, classed with nevi, is better treated by electrolysis. Surgery often gives brilliant and rapid results. In certain selected, raised vascular nevi of the face, radium therapy yields results which probably cannot be achieved by other methods, especially if the treatment is commenced in early infancy.

Annals of Clinical Medicine, Baltimore

1: 337-407 (May) 1923

Dangers and Duties of Hour. H. A. Hare, Philadelphia.—p. 347.
Eventration of Diaphragm: Report of Case. H. G. Beck, Baltimore.—p. 362.
Use of Schick Test and Toxin; Antitoxin Immunization; Bibliographic Review. R. D. Moffet, New York City.—p. 372.
Certain Consideration of Thyroid Disease from the Standpoint of Etiology, Diagnosis and Clinical Management. F. Smithies, Chicago.—p. 381.

Annals of Medical History, New York

5: 1-94 (March) 1923

Anatomical Habitat of Soul. H. M. Brown, Milwaukee, Wis.—p. 1.
Eponymic History of Ganglion Semilunare (Gasseri). H. Viets, Boston.—p. 23.
Riolan and Harvey. J. Donley, Providence, R. I.—p. 26.
William Edmonds Horner. W. S. Middleton, Madison, Wis.—p. 33.
Review of an Early Paper on Malaria. J. E. Sands, Philadelphia.—p. 77.

Archives of Dermatology and Syphilology, Chicago

7: 721-872 (June) 1923

*Bismuth in Treatment of Syphilis. J. V. Klauder, Philadelphia.—p. 721
*Id. J. G. Hopkins, New York.—p. 745.
Lichen Nitidus. H. E. Michelson, Minneapolis.—p. 763.
*Dermatomycosis in Porto Rico. A. L. Carrion, San Juan, Porto Rico.—p. 773.
Biologic Reactions of Arsphenamin. V. Its Reactions with Plasma Proteins and Certain Hydrophilic Colloids and Relation of These Processes to Phenomenon of Protection. J. Oliver and E. Douglas, San Francisco.—p. 778.
Prophylaxis of Syphilis from Writings of Daniel Turner, M.D. (Honorary), Yale, 1723. J. E. Lane, New Haven, Conn.—p. 800.
*Intravenous Injection of Glucose in Treatment of Dermatologic Conditions. J. L. Carrera, Buenos Aires, Argentina.—p. 805.
Bromin Eruption by Placental Transmission. J. P. Costello, St. Louis.—p. 806.

Bismuth in Treatment of Syphilis.—Klauder's report is based on an experimental study of bismuth as a spirocheticidal drug in rabbit syphilis. The relation between the therapeutic active dose and the lethal dose is discussed; and also

the clinical results from the use of bismuth in the treatment of fifty syphilitic patients in the three stages of syphilis, the majority of whom presented a cutaneous manifestation of the disease. The bismuth preparations employed were the French preparation of sodium and potassium tartrobismuthate in aqueous solution and in olive oil, potassium tartrobismuthate in aqueous solution and bismuth trioxid in olive oil and by inunctions. The chemistry of the bismuth tartrates is discussed. All of the bismuth preparations employed in the study were administered intramuscularly. The doses ranged from 0.1 to 0.2 gm. The interval between injections ranged from every other day to every fourth day. Untoward reactions of bismuth therapy in syphilis are given. Lesions of primary, secondary and tertiary syphilis were involuted after a total administration of the bismuth preparations employed, in amounts ranging from 0.3 to 1.5 gm. The four plus Wassermann reaction of patients in early secondary and late secondary stages of syphilis became negative, in the majority of cases, following a total administration of about 2 gm. of the bismuth preparations employed. The four plus Wassermann reaction of tertiary syphilis required varying amounts of bismuth treatment and cannot be stated arbitrarily. The antisyphilitic effect of bismuth is noted for some time after the administration of the drug. The employment of 50 per cent. bismuth inunctions in the treatment of human syphilis exerted a feeble spirocheticidal action. Klauder states that bismuth therapy is particularly advantageous in the treatment of syphilitic patients who are hypersensitive to arsphenamin so that the use of the latter drug is restricted or contraindicated.

Bismuth Treatment of Syphilis.—Of about fifty patients so far treated by Hopkins with bismuth, two developed a stomatitis which subsided promptly on interruption of the injections. No other toxic effects were noted. Many of the patients have gained weight and improved in general nutrition under treatment. Experiments on rabbits show that sodium and potassium tartrobismuthate has marked spirocheticidal power and a curative action on syphilitic lesions in these animals; that in single injection it is about as effective as neo-arsphenamin and more effective than mercuric salicylate. The observations on early active human cases show that it accomplishes at least a temporary apparent cure. Its effect on latent cases suggests that it may be useful in the treatment of those which are resistant to other drugs. These results are in general agreement with those reported by others and indicate that bismuth is a powerful antisyphilitic agent. There is as yet no reason to suppose that it will replace other drugs, the efficacy of which has been proved by long experience; and at present the treatment of syphilitic patients by bismuth alone is held to be justifiable only in an attempt to appraise its therapeutic value.

Dermatomycosis in Porto Rico.—The cases described by Carrion are three good examples of a type of dermatomycosis observed in Porto Rico, whose differential features are a tendency to generalization and a marked troublesome pruritus, other symptoms being identical with those of the regular fungous dermatoses.

Intravenous Injection of Glucose in Skin Diseases.—About seventy injections of a 50 per cent. solution of glucose were given by Carrera at intervals of three or four days, from 16 to 30 c.c. being used for each injection. This treatment was well tolerated. He failed to obtain results in the treatment of Hebra's disease, in Wilson's dermatitis exfoliativa, in Dühring's disease, in psoriasis and eczema; but obtained good results in several kinds of pruritus, including anal and vulval. He agrees with Covisa and Berjarano that glucose causes improvement in edema of the legs due to varices or ulcers.

Boston Medical and Surgical Journal

188: 889-928 (June 7) 1923

Factors Apparently Influencing Development of Pellagra in Massachusetts. G. C. Shattuck, Boston.—p. 889.
Control of Communicable Diseases. A. J. McLaughlin, New York.—p. 892.
*Acute Ascending Meningomyelitis, Possibly Resulting from Arsphenamin Therapy. H. R. Viets, Boston.—p. 895.
Mortamines or Faulty Food Factors. F. L. Burnett, Boston.—p. 897.
Diet During Pregnancy. H. F. Day, Boston.—p. 904.

Acute Ascending Meningomyelitis Resulting from Arsphenamin.—The case reported by Viets would seem to fall into the acute spreading myelitis group of Collier, ascending in character, with definite meningeal involvement. It varied somewhat in character from other reported cases in its great rapidity of development and the completeness of the cord involvement. A possible etiologic factor is suggested in an arsphenamin reaction somewhat analogous to encephalitis hemorrhagica. The probability of the case being one of thecal hemorrhage, spreading poliomyelitis or acute ascending polyneuritis (Landry's) seems to be ruled out by the history, course, and spinal fluid findings.

188: 929-974 (June 14) 1923

Physical Examination of Apparently Healthy Individuals: Its Importance, Limitations and Opportunities. R. I. Lee, Cambridge.—p. 929.
Early Diagnosis of More Common Upper Abdominal Conditions. J. B. Deaver, Philadelphia.—p. 937.
*Obstetric Case Presenting an Unusual Group of Complications. L. E. Phaneuf, Boston.—p. 942.
*Study of Natural Position in Sleep and Its Relation to More Affected Lung in Pulmonary Tuberculosis. D. Zacks, O. S. Pettingill and A. H. Stanhope, Middleton.—p. 946.
Simple Blood Transfusion (Citrate Method). H. M. Clute, Boston.—p. 948.
Transfusion of Blood. D. S. Adams, Worcester.—p. 949.
Convalescence: V. Winifred Masterson Burke Relief Foundation. J. Bryant, Boston.—p. 951.

Suspension of Uterus Should Not Cause Dystocia.—The case reported by Phaneuf is said to show the importance of selecting a type of suspension which when performed during the child-bearing age will not cause dystocia. The round ligaments should be utilized to support the uterus, while the fundus of the uterus should always be left free, and not anchored, in any way, to the anterior abdominal wall. Phaneuf believes that uterine prolapse before the menopause should be treated by proper vaginal plastics, to give the necessary support, and by suspending the uterus, by the round ligaments, merely to hold it in proper position. Dystocia is very apt to result if the uterus is attached high enough on the abdominal wall to take up the slack in the anterior and posterior vaginal walls in an attempt to overcome the associated cystocele and rectocele. The patient whose case is cited had been delivered twice through her pelvis and following the suspension, which had become a fixation, had a miscarriage and so much dystocia with the last pregnancy that a cesarean section was made imperative.

Natural Position in Sleep.—It would appear from the study made by Zacks and others, that the natural posture of rest in sleep will vary inversely with the length of the period of observation. The more prolonged the period of observation, the greater the tendency of the subjects to appear in the "either side" column. There does not appear to be any definite relation between the natural posture assumed in sleep and the side affected by tuberculous disease. In eighty-two cases analyzed, the left side and the right side were equally affected, both as to frequency and extent of lesion. It is the author's impression that in artificial pneumothorax, even in the classical one-sided lesions, the collapse must be gradual or the disease will spread to the well or better side more rapidly or will tend to involve either the larynx or intestine. They strongly believe that general, physical, mental, and emotional rest, preferably bed rest, for a period varying with the individual indication, must be enforced upon the tuberculous subject and the earlier the better if he is to gain the most benefit of the present accepted rational treatment.

Endocrinology, Los Angeles

7: 379-518 (May) 1923

*Pineal Gland, Especially in Relation to Problem of Its Supposed Significance in Sexual Development. K. H. Krabbe, Copenhagen.—p. 379.
Prevention of Exophthalmic Goiter. I. Bram, Philadelphia.—p. 415.
*Hyperthyroidism: New Clinical Sign. H. H. Lissner, Los Angeles.—p. 431.
Exophthalmic Goiter Following Varicella and Mastoiditis in Child with Status Thymolymphaticus. H. Wheelon, Seattle.—p. 437.

Pineal Gland and Sexual Development.—In the clinical picture of pineal gland tumors, Krable says, pubertas praecox coincides with teratoma formation in the pineal gland. Thus

it is possible in a number of brain tumors in children to diagnose with great certainty that the tumor is a teratoma of the pineal gland. However, knowledge of the function of the pineal gland is defective. It is certain that this organ has a function in man and in the majority of mammals, and that this function is partly an internal secretion, but an internal secretion which is not indispensable to life. Finally, there is total lack of knowledge of the influence of this internal secretion in the body and, particularly, the hypothesis that the secretion plays a rôle in the development of puberty is, to date, completely without significant evidence.

New Sign of Hyperthyroidism.—The sign elicited by Lissner is a bruit, heard just behind and below the sternoclavicular junction. It is unlike the murmur over the gland when it is visually or palpably enlarged. In fact, it may be present when both these factors are absent. This sound is hissing or siren-like in character, is differentiated from the whirring or water-wheel churning sound heard over the gland itself. The sound is said to be distinctive of hyperthyroidism, or of potential hyperthyroidism. It is heard more frequently on the right side than on the left, but in marked cases, when there is considerable evidence of thyreotoxicosis, it is present on both sides. It is not transmitted to any of the other blood vessels of the neck or superficial vessels of the trunk or extremities, and Lissner has never heard it over the superior thyroid vessels. It is increased by deep inspiration, and is not lost during expiration. It is systolic in time and is lost during the rest period in the cardiac cycle. Accompanying the hissing bruit, but with no definite degree of constancy, is a palpable thrill in the cubital artery.

Georgia Medical Association Journal, Atlanta

12: 177-228 (May) 1923

Simple Goiter—Its Local Prevalence. C. H. Watt, Thomasville.—p. 177.
Use and Abuse of Radium. A. D. Little, Thomasville.—p. 180.
Removal of Angiomata with Radium. C. Swanson, Atlanta.—p. 181.
False Localizing Signs Resulting from Increased Intracranial Pressure. M. Harbin, Rome.—p. 184.
Birth Control and Physician. N. A. Alpert, Atlanta.—p. 185.
Importance of Knowledge of Thrombo Angitis Obliterans to Southern Physician. S. J. Sinkoe, Atlanta.—p. 188.
Infantile Diarrhea. M. M. McCord, Rome.—p. 190.
Why Adenoids Often Permanently Injure Features, Mind and Health. E. S. Calvin, Atlanta.—p. 193.
Consideration of Eye, Ear, Nose and Throat Conditions at Georgia State Sanitarium, Milledgeville, Ga., with Report of Cataract Operations Performed. B. McH. Cline, Milledgeville.—p. 195.
Problem of Mortality in Surgical Statistics. R. M. Harbin, Rome.—p. 197.
Case of Accidental Vaccination for Smallpox Which was Mistaken for Anthrax. J. H. Kite, Atlanta.—p. 200.
Sulpharsphenamin in Treatment of Syphilis. E. S. Osborne, Savannah.—p. 202.
Use of Veratrum Viride in Pneumonia. C. Van Wood, Cedartown.—p. 204.
Removal of Safety Pin from Esophagus. J. H. Buff, Atlanta.—p. 205.

Journal of Experimental Medicine, Baltimore

A. 37: 601-732 (May) 1923

*Studies Based on Malignant Tumor of Rabbit: I. Spontaneous Tumor and Associated Abnormalities. W. H. Brown and L. Pearce, New York.—p. 601.
Id. II. Primary Transplantation and Elimination of Coexisting Syphilitic Infection. L. Pearce and W. H. Brown, New York.—p. 631.
Stable Suspensions of Auto-agglutinable Bacteria. P. H. De Kruif and J. H. Northrop, New York.—p. 647.
*Antagonistic Growth Activating and Growth Inhibiting Principles in Serum. A. Carrel and A. H. Ebeling, New York.—p. 653.
Surface Tension of Serum: V. Relation Between Time-Drop and Serum Antibodies. P. Lecomte du Nouy, New York.—p. 659.
Absorption of Specific Agglutinins in Homologous Serum Fed to Calves During Early Hours of Life. T. Smith and R. B. Little, Princeton, N. J.—p. 671.
*Studies on Total Bile: III. Bile Changes Caused by Pressure Obstacle to Secretion; Hydrohepatosis. P. D. McMaster, G. O. Broun and P. Rous, New York.—p. 685.
Id. IV. Enterohepatic Circulation of Bile Pigment. G. O. Broun, P. D. McMaster and P. Rous, New York.—p. 699.
*Botulism: Manner in Which Toxin of Clostridium Botulinum Acts on Body. Effect on Autonomic Nervous System. E. C. Dickson and R. Shevky, San Francisco.—p. 711.

Spontaneous Malignant Tumor at Site of Pulmonary Syphilitic Lesion.—A malignant tumor which developed at the site of a primary syphilitic lesion in the scrotum of a rabbit, about four years after inoculation, and which eventually led to the death of the animal, has formed the basis for an extensive series of investigations by Brown and Pearce, beginning with the study of the spontaneous tumor. The present report contains the clinical history of the animal from the time of inoculation to its death and the results of pathologic examinations. The conclusion is reached that the growth in the scrotum represented a neoplasm of epithelial origin which was composed of cells allied to those found in the bulb and root sheath of the hair. The evidence presented was sufficient to warrant the assumption that the factor of foremost importance in the development of the tumor was constitutional rather than local.

Transplantation of Spontaneous Malignant Tumor.—Several attempts were made by Pearce and Brown, to transplant a spontaneous malignant tumor in a syphilitic rabbit before a method was devised which proved successful on account of the vigorous granulomatous reaction which was aroused by the introduction of tumor fragments into these tissues. This difficulty was overcome by the use of intratesticular inoculations. With this method, a good growth was obtained in nearly all animals. It appeared possible, however, that a syphilitic infection had been transmitted along with the tumor, and hence treatment with arsphenamin was instituted as a means of eliminating this infection. A study of the transplanted tumor in the first and second generations showed that it possessed a high degree of malignancy. Metastases occurred at an early period in the majority of animals, and while some of them appeared to recover, the indications were that more than 50 per cent. might be expected to succumb to the effects of the tumor growth within a period of six or seven months. The method of intratesticular inoculation now in use is described in detail.

Growth Activating and Inhibiting Principles in Serum.—The substances precipitated by carbon dioxid from the serum of chickens, 1 or 2 years old, slightly increased the activity of pure cultures of a 10 year old strain of fibrobalsts, which is interpreted by Carrel and Ebeling as being an indication that a growth promoting substance had been obtained from the serum. The rate of growth of fibroblasts was slower in serum deprived of its globulins and the increase of the inhibiting effect of the treated serum is thus manifested. It would appear that the inhibiting action of serum is referable to one or several growth activating substances which precipitate by carbon dioxid, and to one or several growth retarding substances which remain in the supernatant serum after the precipitate has been thrown down by centrifugation.

Bile Changes Due to Obstacle to Secretion.—In bile that is secreted against an abnormally high pressure, as during partial obstruction, McMaster, Brown and Rous found the pigment, cholate, and cholesterol outputs all cut down, and so much more than was the fluid bulk that the concentration of the substances per cubic centimeter of bile was notably lessened. The fluid obtained at the greatest pressure compatible with secretion contained traces only of the typical biliary constituents. The bearing of these alterations in the bile on the consequences of partial biliary obstruction is discussed. An analysis of the liver changes following biliary obstruction brings out their essential likeness to the changes that occur under similar cirumstances in glands in general and the kidney in particular. The major physiologic factors concerned in the development of hydronephrosis and in the liver changes after biliary obstruction are identical. The authors suggest that the term hydrohepatosis as applied to the liver condition would be useful not merely to designate it but to indicate the principles underlying its development. In clinical instances of biliary obstruction, the likeness to hydrohepatosis is often hidden because of the activity of the gallbladder to render the stasis bile dark and thick. There is, then, a concealed hydrohepatosis, differing merely by the character of the duct content from the manifest hydrohepatosis with "white bile" that is found when the gallbladder fails to act.

Effect of Botulism Toxin on Nervous System.—A survey of the results of the experiments made by Dickson and Shevky, that in botulinus intoxication in cats, dogs, and rabbits there is a specific effect on the portions of the autonomic nervous system which Gaskell described as the bulbo-

sacral and prosomatic outflows of connector fibers, respectively, which results in a blocking of the nerve impulses of these nerves. The experimental as well as the clinical evidence indicates that there is no damage to the nerves of the thoracicolumbar outflow. The exact location of the damage has not been ascertained nor has the mechanism by which the nerve impulse is blocked been determined. The experiments show, however, that the lesions in these portions of the nervous system are not of central distribution but are peripheral, and that the block cannot be due to an organic break in the conduction apparatus but must be due to some derangement which is relatively unstable. A discussion of the application of the results of these experiments to the clinical manifestations of botulism is promised after the effect of the toxin on the skeletal motor nerves has been described.

Journal of Infectious Diseases, Chicago

32: 401-490 (June) 1923

Infectious Abortion in Domestic Animals. I. Infection of Swine and Rabbits. H. M. Wecter, Chicago.—p. 401.
*Serologic Classification of B. Botulinus. I. Preparation of Antiserum. P. Schoenholz and K. F. Meyer, San Francisco.—p. 417.
Effect of Temperature on Velocity of Reaction in Hemolysis. W. E. Gouwens, Chicago.—p. 421.
Thermal Death Time of Spores of Clostridium Botulinum. 2. Differential Staining of Living and Dead Spores. G. S. Burke, San Francisco.—p. 433.
Hydrogen-Ion Studies. VII. Hydrogen-Ion Concentration Range of Precipitin Reaction (Sheep Serum). E. F. Hirsch, Chicago.—p. 439.
*Bacteriologic Study of Vulvoginitis of Children. R. A. Anderson, O. T. Schultz and I. F. Stein, Chicago.—p. 444.
Biologic and Serologic Studies of Bacillus Mucosus Group. Comparison of Strains from Granuloma Inguinale with Strains from Respiratory Tract. J. C. Small and L. A. Julianelle, Philadelphia.—p. 456.
*Two "Food Poisoning" Outbreaks Apparently Due to Bacilli of Paratyphoid Enteritidis Group. E. O. Jordan and J. C. Geiger, Chicago. —p. 471.
Final Hydrogen-Ion Concentration in Paratyphoid Enteritidis Group. E. Yuri, Chicago.—p. 479.
*Experimental Gangrene. B. S. Kline, Cleveland.—p. 481.

Serologic Classification of Bacillus Botulinus.—The observations made by Bronfenbrenner, Schlesinger and Calazans, that *B. botulinus*, Type A, can be differentiated from Type B by means of serologic tests, have been confirmed by Schoenholz and Meyer and they have furthermore, shown by means of agglutinin and agglutinin absorption tests that the A types can be subdivided into at least three and possibly four groups, while the B types can be divided into at least two groups.

Bacteriology of Vulvovaginitis.—In a series of forty-two cases of vulvovaginitis among children that were examined bacteriologically by Anderson, Schultz and Stein 35.7 per cent were due to the gonococcus, and 64.3 per cent. were nonspecific. In 53.3 per cent. of the specific cases, the gonococcus was isolated in pure culture. In the remainder, the specific diagnosis was based on the presence within leukocytes of morphologically typical, gram-negative diplococci. In the nongonorrheal cases a mixed flora was present, but streptococci of intestinal origin appeared to be the most important agents. Staphylococci, colon bacilli and gram-positive bacilli were frequently encountered, probably as secondary invaders or harmless symbionts. Uncleanliness and local irritation are believed to be an important, and probably the primary, factor in the nonspecific cases, the condition thus established being maintained or made worse by bacterial localization. In the latter part of the process, bacteria of intestinal origin appear to be most important. Cases in which filth and irritation appeared to be the chief factors yielded most readily to the routine therapeutic procedures which were applied in all cases. Quarantine and exclusion from school are not believed to be necessary in the nongonorrheal cases.

Paratyphoid Bacillus Causes Food Poisoning.—The features of special interest in the outbreak of food poisoning investigated by Jordan and Geiger are: (1) the occurrence of three outbreaks, apparently due to a "cream sauce," in substantially the same group of persons; (2) the isolation of *B. paratyphosus* A from the milk used in making the sauce and also from the stool of one of the persons affected; (3) the apparent lack of an immunization process, as evidenced by the repeated attacks experienced by one and the same person. In another food poisoning outbreak *B. paratyphosus* B was found in meat contained in a meat sandwich but the exact source of contamination of the meat could not be discovered.

Experimental Gangrene.—In the presence of devitalized tissue, Kline was able to produce gangrene experimentally in guinea-pigs with material from dental caries and pyorrhea alveolaris, Vincent's angina and pulmonary gangrene containing spirochetes and fusiform bacilli. The experimental production in the rabbit of pulmonary gangrene with material from a carious tooth containing spirochetes and fusiform bacilli is further evidence that the apiration of these organisms from lesions in the mouths of human beings may lead to pulmonary gangrene.

Journal of Laboratory and Clinical Medicine, St. Louis

8: 495-562 (May) 1923

*New Points in Physiology of Digitalis Therapy. O. H. Brown, Phoenix, Ariz.—p. 495.
*Hyperglycemia. Study of 2,000 Blood Chemical Analyses. H. M. Feinblatt, Brooklyn.—p. 500.
*Investigation on Picramic Acid Methods for Blood Sugar. H. C. Sweany and E. M. Johnson, Chicago.—p. 506.
Preservation of Natural Colors in Gross Specimens. O. Klotz, Sao Paulo, Brazil.—p. 514.
*Ventricular Fibrillation in Man with Temperary Cardiac Recovery. F. A. Willius, Rochester, Minn.—p. 518.
*Duodenectomy, Report of Experiment Four Years After Operation. F. C. Mann and K. Kawamura, Rochester, Minn.—p. 523.
Clinical and Laboratory Procedures in Pediatrics. A. Levinson, Chicago.—p. 525.
Simple Method for Computation of Metabolic Determinations by Use of Slide Rule. M. W. Hollingsworth, Anaheim, Calif.—p. 538.
New Animal Holders and Mouth Gags. J. Lepak, Chicago.—p. 542.
Technic for Removal and Transplantation of Rat and Mouse Tumors. D. C. A. Butts, Philadelphia.—p. 545.

Physiology of Digitalis Therapy.—The effect of dilatation of the heart on the size of the lumen of the coronary arteries was studied by Brown. As a heart dilates, the coronary arteries are stretched in length and narrowed in diameter, with the consequence of a reduced blood carrying power which may easily reach 50 per cent. or more. At such times, then, the heart is doing more work than ordinarily, and with less than usual nourishment. A heart that is dilated or in danger of being dilated needs digitalis, and in amounts to overcome or prevent the dilatation. The amounts needed may be much more than what has commonly been considered the proper dosage.

Hyperglycemia.—Out of 2,000 routine blood sugar determinations made by Feinblatt, eighty-one yielded readings in excess of 150 mg. per hundred cubic centimeters. Thirty-four of these patients presented clinical evidences of diabetes mellitus. The remaining forty-seven patients were considered nondiabetic. The nondiabetic series furnished a heterogeneous group, and in only fourteen patients could the diagnosis account for the hyperglycemia. A study of the relation between hyperglycemia and glycosuria served to emphasize the fact that the renal blood sugar threshold varies in different persons and in the same person under different circumstances. In diabetes a high threshold value may exist, and this tends to increase in proportion to the severity of the disease.

Picramic Acid Method for Determining Blood Sugar Not Reliable.—It has been demonstrated by Sweany and Johnson that the picramic acid methods for the estimation of blood sugar are unreliable in certain pathologic conditions. It has also been established that the presence of phenol or potassium phenyl sulphate in blood produces a false sugar result when these methods are employed. From results obtained on pathologic subjects and by the addition of sugar to blood filtrates it would seem to indicate that the modified method of Folin and Wu for the estimation of blood sugar possesses many advantages over any of the other methods studied. It is suggested that the picramic acid methods may be used to determine the presence in the blood of "reducing substances other than glucose."

Ventricular Fibrillation with Temporary Recovery.—A case is presented by Willius in which the patient showed progressive cardiac failure. During the syncopal attack fibrillation of the ventricles occurred. The patient lived thirty-four and a half hours after the attack. This case is the second instance

of temporary cardiac recovery in man observed following ventricular fibrillation.

Successful Duodenectomy.—Mann and Kawamura report one experiment in which the animal (dog) was in good condition four years after duodenectomy. The duodenum was removed and the continuity of the gastro-intestinal tract maintained by an end-to-end anastomosis of jejunum to stomach. The first portion of the jejunum thus assumed the position normally occupied by the duodenum. The common bile duct and pancreatic ducts were transplanted into this transposed portion of the jejunum at approximately the same distance from the pylorus and from each other as they occurred normally. The experiment is of interest, (1) in showing the effect of removal of the duodenum; and (2) the effect of transplantation of the common bile and pancreatic ducts. The animal remained in perfect health and maintained its normal weight for four years following removal of the duodenum, and there is no reason to believe that the duodenectomy would ever have affected the health of the animal, had it been allowed to live longer. The experiment therefore definitely proves that in the dog the duodenum is not essential to life or good health, and that whatever function it may have can be compensated for by the remainder of the intestinal tract. It is also shown that the transplantation of the bile and pancreatic ducts can be carried out successfully so that the respective glands will remain practically normal for a long time.

Journal of Metabolic Research, Morristown, N. J.

2: 547-985 (Nov.-Dec.) 1922

*Insulin in Treatment of Diabetes Mellitus. F. G. Banting, W. R. Campbell and A. A. Fletcher, Toronto.—p. 547.
*Ketosis, Acidosis and Coma Treated by Insulin. W. R. Campbell, Toronto.—p. 605.
*Blood Sugar Following Insulin Administration and Symptom Complex-Hypoglycemia. A. A. Fletcher and W. R. Campbell, Toronto.—p. 637.
*Insulin in Hospital and Home. E. P. Joslin, H. Gray and H. F. Root, Boston.—p. 651.
*Clinical Observations on Insulin. R. M. Wilder, W. M. Boothby, C. J. Barborka, H. D. Kitchen and S. F. Adams, Rochester, Minn. —p. 701.
*Effects of Insulin in Severe Diabetes. J. R. Williams, Rochester, N. Y. —p. 729.
*Effect of Insulin on Metabolism of Diabetes. R. Fitz, W. P. Murphy, and S. B. Grant, Boston.—p. 753.
*Use of Insulin in Juvenile Diabetes. H. R. Geyelin, G. Harrop, M. F. Murray and E. Corwin.—p. 767.
*Clinical Use of Insulin. R. T. Woodyatt, Chicago.—p. 793.
*Clinical Observations with Insulin. I. Use of Insulin in Diabetic Treatment. F. M. Allen and J. W. Sherrill, Morristown, N. J.

Insulin in Treatment of Diabetes.—In this paper Banting, Campbell and Fletcher discuss more fully some of the problems which have arisen in the treatment of diabetes mellitus with insulin. The clinical histories and protocols of a number of severe diabetics are presented, and interesting features of their treatment are discussed. Suggestions are made as to the criteria on which to judge the requirement of insulin in various cases, and as to the mode of treatment to be adopted.

Use of Insulin in Diabetic Coma.—Two cases are reported by Campbell as typical of the successful results obtained in the treatment of diabetic coma by insulin. One illustrates the use of subcutaneous injection of insulin, and the other the employment of insulin intravenously in order to obtain more rapid effects. It is considered advisable to use carbohydrate in addition to insulin in order to prevent hypoglycemia and to reduce the combustion of fats to a minimum. The results of treatment in each case were satisfactory from a clinical point of view. Three fatal cases of coma are reported because of the additional light thrown on the treatment of this condition. Two of them present complications—one, influenzal pneumonia; the other pyemic abscesses of the kidney—both sufficiently severe to cause a fatal outcome. In both these cases, despite the severe complications, the administration of insulin had a definite effect on the ketones. The third case presented a syndrome so far as known not previously seen in diabetes, which may represent an end stage of ketone poisoning.

Blood Sugar Following Insulin Administration.—In most patients there is a considerable range in the amount of insulin which will result in a fall of the blood sugar to the normal fasting level. When a dose in excess of this amount is given a further fall in the blood sugar level occurs and, at the same time, there results a group of symptoms which is quite characteristic. A relationship between the lowered blood sugar level and the occurrence of these clinical phenomena appears to be so well established that Fletcher and Campbell refer to them as hypoglycemic reactions. The severity of the reaction depends on the blood sugar level, but the blood sugar level alone does not entirely account for the disturbance. The phenomenon is possibly associated with the physicochemical properties of the sugar remaining in the blood stream after insulin has been administered. In the treatment of hypoglycemia the most satisfactory results are obtained with glucose but quite good results are obtained with other sugars. Orange juice has been used successfully in controlling the symptoms, probably because of its content of glucose and levulose. Epinephrin 1:1,000, 1 c.c., furnishes a ready means of controlling hypoglycemia when the patient is unconscious. In the most severe cases it is better to give epinephrin and then give glucose intravenously as well, as there may be delayed absorption from the alimentary tract. In less severe cases glucose may be given as soon as the patient can swallow.

Insulin Treatment of Diabetes.—Eighty-three patients have been treated by Joslin, Gray and Root with insulin. In large measure these were chosen from the severer surviving diabetics cared for since 1898. One patient, after discharge from the hospital, omitted insulin several weeks later in his home while on an increased diet. He reentered the hospital in coma and died in seven and one-half hours. There were no others which could be attributed to insulin and no other deaths from coma occurred in hospital among the 204 patients admitted for diabetes during this period on insulin administration. The average number of units of insulin given to fifty-three of the patients for an average period of sixty-three days was 712, or 11 units a day. The blood sugar at the beginning of treatment averaged 0.24 per cent. and at the end of treatment 0.19 per cent. The greatest percentage gain in weight was 25 per cent., and the average 7.6 per cent. Patients at all ages, from 2 years to 77 years, responded equally well to treatment, but the youngest patients show the greatest gain in weight. Cases of short and long duration also responded equally well to treatment. The greatest number of units given in twenty-four hours was 100. A total of thirty reactions have occurred in eleven of the eighty-three patients during the administration of 5,153 doses of insulin. During the reactions the blood sugar at no time fell below 0.03 per cent. All reactions occurred between a quarter of an hour and three and three-quarters hours following injection of insulin. The importance of diarrhea in rendering patients liable to hypoglycemic reactions is suggested. General infections were uninfluenced by insulin, save that complicating acidosis was lowered. Local infections appeared to heal more rapidly. The omission of insulin resulted in the reappearance of glycosuria which did not reach its height until the fifth and last day of the omission of the drug. The administration of insulin by the mouth in two cases was without effect. Patients treated in the hospital with insulin continued successfully the treatment at home, due to additional training in diet as well as in insulin medication.

Clinical Studies on Insulin.—The studies reported by Wilder et al. are so diverse that it is difficult to draw a brief summary, or to record the conclusions in detail. There seems to be no question regarding the very definite effect of insulin on sugar metabolism, and the authors are convinced of its great value in the treatment of the more severe forms of diabetes in the emergencies of this condition (acidosis, infection, and so forth).

Effects of Insulin in Severe Diabetes.—A series of forty-four cases of diabetes was studied by Williams over periods of time varying from twenty to 250 days. Of these, thirty-seven cases were unusually severe, nine patients being in coma when treatment was begun. Four deaths occurred. Two of these can be directly attributed to insufficient insulin, and two were from causes unrelated to the diabetes. The forty living patients have gotten along with far greater com-

fort and strength than was experienced before the institution of the insulin treatment. The feeding of high diets and attempting to make their utilization possible by large doses of insulin has not been satisfactory. The best treatment, apparently, is a diet which will enable the patient to meet the energy requirements of light work with sufficient insulin to insure the metabolism of the food. Williams says that experience to date does not warrant the conclusion that the natural function of the pancreas in cases of severe diabetes is either increased, regenerated or diminished because of the use of the extract.

Effect of Insulin on Metabolism of Diabetes.—The evidence accumulated by Fitz, Murphy and Grant from the study of the cases reported in regard to the effect of insulin on the metabolism of diabetes confirms in every way that already brought forward by Banting and Best and their associates.

Use of Insulin in Juvenile Diabetes.—In a series of nine children, aged from 2 to 15 years, suffering from severe diabetes, treatment with insulin has been followed by certain definite results: (1) arrest of the downward course of the disease; (2) achievement of a total food intake approximating the normal age requirement in calories; (3) steady gain in weight and growth, with increase in mental and physical vigor; (4) absence of severe or permanent ill effects. Since these results have been observed over periods of only three to eight months, conclusions as to the continued beneficial effect of insulin over a period of years Gevelin et al. assert are not warranted.

Clinical Use of Insulin.—This report presents, in brief, the results obtained by Woodyatt in the treatment of about 150 diabetics. Old cases with low fixed tolerance limits have been found difficult to keep sugar free at all times, owing to unavoidable variations of diet, insulin dosages, exercise, etc., and it would not seem necessary that they do so, since they seem to have no natural tolerance to lose. On the other hand, all cases that have a considerable natural tolerance or power to regain such should be kept sugar free if possible, and it has been found to be possible in most cases.

Value of Insulin in Treatment of Diabetes.—Allen and Sherrill describe in detail their clinical experience with insulin, from the beginning of its therapeutic trials in the United States. The 161 patients in their series comprise the largest group yet treated with insulin under conditions of thorough and prolonged control. Manifestly, an abstract of this paper is made an impossibility because of the wealth of details. However, from a practical standpoint, three points seem worthy of emphasis by repetition. It is feasible for patients at their homes to remain free from glycosuria and nearly free from hyperglycemia under combined treatment by diet and insulin. Overnutrition makes freedom from glycosuria difficult, and exposes to acidosis, infection and other dangers. Insulin revolutionizes the results of diabetic treatment when properly employed, but it cannot atone for lax or inaccurate dietary methods.

Philippine Journal of Science, Manila

22: 467-555 (May) 1923

Undescribed Crane Flies from Formosa and Luzon (Tipulidae, Diptera). C. P. Alexander, Amherst, Mass.—p. 467.
Achilixius, New Genus, Constituting New Family of Fulgoroidea (Homoptera). F. Muir.—p. 483.
Indo-Malayan Rhynchitinids (Curculionidae). V. E. Voss.—p. 489.
Additions to Herpetologic Fauna of Philippine Islands, III. E. H. Taylor.—p. 515.

South Carolina Medical Association Journal, Greenville

19: 505-532 (June) 1923

Simple Methods Which Aid in Detection of Early Nephritis. G. R. Wilkinson, Greenville.—p. 506.
Twelve Years in Rural Health Work. L. A. Riser, Columbia.—p. 509.
Public Health Program of New South. W. S. Leathers, Jackson, Miss. —p. 513.
Salivary Calculus. S. C. Hays, Clinton.—p. 519.
Urology: Prostatic Obstruction. M. Weinberg, Sumter.—p. 521.
Obstetrics and Gynecology. R. E. Seibels, Columbia.—p. 522.
Dermatology and Syphilology. J. R. Allison, Columbia.—p. 523.
Surgery: Duodenal Ulcer. Choice of Operative Procedure and Technic of Pylorectomy. S. O. Black, Spartanburg.—p. 524.

Tennessee State Medical Association Journal, Nashville

16: 1-40 (May) 1923

Pelvic Infections. H. M. Tigert, Nashville, Tenn.—p. 1.

Virginia Medical Monthly, Richmond

51: 147-220 (June) 1923

*Case of Abdominal Pregnancy. J. B. Jones, Petersburg.—p. 147.
Painless Labor. R. L. Raiford, Sedley.—p. 152.
Nasal Accessory Sinuses and Optic Nerve Disturbances. J. E. Diehl, Norfolk.—p. 155.
Hysterectomy and Ovarectomy for Benign Tumors and Suppurative Disease in Six Hundred Women. G. P. La Roque, Richmond.—p. 156.
Sehrt Aorta Clamp for Control of Postpartum Hemorrhage. M. P. Rucker, Richmond.—p. 162.
Certain Phases of Arterial Hypertension. W. W. Herrick, New York. —p. 163.
Transfusion of Blood. C. Williams, Richmond.—p. 168.
Treatment and Prognosis of Chronic Cardiac Lesions. T. N. Davis, Lynchburg.—p. 172.
Chronic Cardiac Diseases; Pathology and Diagnosis. F. C. Rinker, Norfolk.—p. 174.
Roentgen Ray and Radium Treatment of Infected Tonsils and Adenoids. E. U. Wallerstein Richmond.—p. 177.
Bacteriophage. E. C. L. Miller, Richmond.—p. 180.
Dental Reclamation Through Medical Revolution. J. B. Williams, Richmond.—p. 182.
Correction of Dentistry and Practice of Medicine. M. Call, Richmond.—p. 186.
Ethmoiditis. E. G. Gill, Roanoke.—p. 193.
Ethmoiditis. W. L. Mason, Richmond.—p. 196.
Case of Complete Heterotaxia with Electrocardiographic and Roentgen-Ray Studies. W. E. Killinger, Victoria.—p. 198.
Physician and Quack. J. E. Rawls, Suffolk.

Abdominal Pregnancy.—At about the end of the thirty-eighth week Jones operated on his patient and delivered her of a live baby. The placenta was entirely arched over by the sigmoid, receiving its blood supply from the mesosigmoid and left broad ligament. The patient had been under continuous observation for many months.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

46: 1-146 (May) 1923

Certain Tonic or Postural Reflexes in Hemiplegia; So-Called "Associated Movements." F. M. R. Walshe.—p. 1.
Oculomotor Nucleus of Tarsius and Nycticebus. J. I. Hunter.—p. 38.
Lethargic Encephalitis and Herpes Febrilis. Z. Sumanowski and N. Zylberlhast-Zand.—p. 49.
Dystrophia Myotonia (Myotonia Atrophica). W. J. Adie and J. G. Greenfield.—p. 73.
*Iron in Brain. A. Gans.—p. 128.

Iron in Brain Indicative of Disease.—The iron reaction reveals the existence of iron particularly in the nuclei of the extrapyramidal motor system, which owing to the researches of Wilson and the Vogts are of particular interest at present. In Wilson's disease and Westphal's pseudosclerosis there is an association of progressive degeneration of the nucleus lentiformis and of the liver; also in the lesions of paralysis agitans localized in the globus pallidus and substantia nigra; postencephalitic Parkinsonism with characteristic alterations in the substantia nigra; the affection of the globus pallidus, and in some cases of certain parts of it only, in poisoning by carbonic monoxid, manganese, hydrocyanic acid and after strangulation; the diseases of the putamen described by the Vogts as "status marmoratus" and "status dysmyelinisatus" and the "Kernicterus" of Schmorl. The method adopted by Gans has been developed by Spatz. The existence of iron in the nervous system can be demonstrated in either the fresh or fixed state, and macroscopically or microscopically, but the most striking results are obtained by examining the fresh brain macroscopically. A section of the brain is placed in a concentrated deep yellow solution of ammonium hydrosulphid. After some seconds the globus pallidus and the substantia nigra always show a greenish grey color. It is important to observe the beginning and the order of succession of the coloration, since, when they are

completed the difference in intensity is not so clear as at first. After some minutes, when these centers have become dark, other parts begin to react; of these the nucleus ruber shows the strongest reaction, and next the nucleus dentatus cerebelli, the corpus Luysi, the putamen and nucleus caudatus. The difference in the staining of the putamen and of the globus pallidus is of great importance; it may be associated with their different ontogenesis and phylogenesis, and with their specific vulnerability. This is seen not only in the rather rare diseases of the extrapyramidal motor centers, for the majority of cases of general paralysis show it with a striking clearness, even those in which during life extrapyramidal motor symptoms were not observed. In the putamen and nucleus caudatus typical cellular infiltrations are found, while the globus pallidus is free or nearly free of them, the lamina medullaris externa forming a sharp demarcation. The iron reaction gives very interesting results in the brain of patients who suffered from general paralysis. Lubarsch found iron pigment without exception in more than a hundred cases of general paralysis. Gans has also found the reaction always positive in general paralysis, even in a brain which remained for some months in liquor formaldehydi.

British Medical Journal, London

1: 1005-1042 (June 16) 1923

*Treatment of Uterine Fibroids: Operation or Radiation? W. F. Shaw.—p. 1005.
Activity of Capillary Blood Vessels and Its Relation to Certain Forms of Toxemia. H. H. Dale.—p. 1006.
Endocrines, Vitamins and Subtleties. L. Williams.—p. 1010.
Operation for Atrophic Rhinitis (Ozena). J. Adam.—p. 1013.
Acute Otitis Media with Jugular Bulb Thrombosis. E. Watson-Williams.—p. 1014.
Epinephrin as Potential Factor in Hyperthyroidism. D. J. Harries.—p. 1015.
Case of Torsion of Gallbladder. H. C. Jonas.—p. 1016.
Ileocolic Intussusception Caused by Meckel's Diverticulum and Simulating Ectopic Gestation. H. H. Greenwood.—p. 1016.
Case of Rat Bite Fever. J. O. Symes.—p. 1017.
Ringworm and Its Treatment. J. Robertson.—p. 1017.
*Foreign Bodies in Stomach Removed by Operation. A. G. Brand.—p. 1018.

Operation or Radiation for Uterine Fibroid.—Small fibroids, not larger than an orange, which are not producing symptoms, Shaw leaves alone, but he keeps the patient under observation, as there is a possibility before the menopause of the tumor causing increased hemorrhage or increasing in size, and after the menopause of becoming malignant. If the patient is very anemic, the tumor should be treated by radiation to stop the hemorrhage and allow her general health to improve, but the tumor should be removed later. In all other cases the tumor should be removed by hysterectomy or myomectomy — myomectomy being preferred for women in the childbearing period who desire a family and when a useful uterus can be left, panhysterectomy for cases with a badly lacerated cervix in addition to the fibroid, and supravaginal hysterectomy for the remainder.

Tumor of Stomach Really Swelling Due to Foreign Bodies.—Epigastric pain, vomiting, and a movable mass in the region of the gall bladder were the main symptoms in Brand's case. He operated and removed from the stomach seventeen keys, the largest of which was 3⅝ inches in length; two coins (one with a ring through it); three safety pins (one open); one button, one engineer's split pin, and one pencil sharpener. The tumor which was felt before operation was gone.

Calcutta Medical Journal

17: 145-192 (April) 1923

*Possible Function of Suprarenals in Kala-Azar. D. N. Banerjee and J. C. Saha.—p. 145.
War Neuroses. S. K. Ray.—p. 151.
Lethality of Cinchona Derivatives on Bacillus Typhosus and Flagellates. S. L. Sarkar.—p. 162.
Main Principles of Cardiologic Practice. S. C. Bose.—p. 164.
Case of Fever Due to Colon Bacillus Infection Simulating Malaria. H. C. Banerjee.—p. 171.
Case of Ruptured Ectopic Gestation Simulating Abdominal Tumor. J. C. Chatterji.—p. 171.

Insufficiency of Suprarenals in Kala-Azar.—From the fact that in kala-azar Banerjee and Saha found hypoglycemia and symptoms similar to those of suprarenal insufficiency, they conclude that there is insufficiency of the suprarenals in kala-azar which may be the result of a deficiency due to structural changes of the suprarenals, deficiency due to neutralization of the toxic substances by the whole amount of epinephrin present, or exhaustion of the glands by any of these factors.

China Medical Journal, Shanghai

37: 351-452 (May) 1923

*Cases of Dermatitis Caused by Liparid Moth, Euproctis Flava Bremer. R. G. Mills.—p. 351.
Practical Suggestions for Performing the Sachs-Georgi Test for Syphilis. S. D. Joffick.—p. 372.
*Simplified Precipitation Test for Diagnosis of Syphilis. S. Cochran and Fuh-Hsin Yu.—p. 382.
Suspension of Uterus. J. R. B. Branch.—p. 387.
Hysteropexy: Simple, Safe and Effective Operation for Prolapse of Uterus. J. L. Maxwell.—p. 393.
Preparation of Surgical Solution of Chlorinated Soda. J. Cameron.—p. 403.

Liparid Moth Causes Dermatitis.—An analysis of forty-seven cases of urticarial dermatitis in Koreans and foreigners is presented by Mills. The moth *Euproctis flava* Bremer, a member of the well known family *Liparidae*, was shown to be the cause in nineteen patients and the circumstantial evidence in the remaining cases is very strong. Irritation began at the point of contact, commonly the neck, and spread by contiguity and by dissemination through clothing and bedding. The covered tender parts of the body were more affected than the tougher, hairy portions. There was no evidence of direct infection from one person to another. The lesion consisted of papules with red areolae, tending to vesiculation, which left irregular brownish discoloration after involution. Itching was intense, and scratching, exercise, profuse perspiration and undue heating of the skin aggravated the condition. The best treatment is: 1. Mechanical removal of hairs from the skin by sea bathing, alkaline washes or salves followed by antipruritic lotions or ointments. 2. Avoidance of known aggravating conditions. 3. Washing of all clothing and bedding contaminated with the hairs.

Simplified Precipitation Test for Syphilis.—Cochran and Yu describe a modification of Kodama's test which they have used with good results in more than 2,000 cases.

Japan Medical World, Tokyo

3: 19-41 (Feb.) 1923

*Biologic Changes of Bacillus Typhosus Met with by Passing It Through Immune Serum Medium and Immunized Animal Body. S. Yanagisawa.—p. 19.
*Influence on Hepatic Tissue of Feeding Various Nutrients in Excess of Normal Requirements. K. Kusano.—p. 26.
*Hitherto Unknown Action of Heat on Testicles. N. Fukui.—p. 27.
Opium Abuse and Its Control in Japan. M. Miyajima.—p. 28.

Biologic Changes in Typhoid Bacillus Obtained by Culture.—By cultivating the typhoid bacillus in the immune serum broth, Yanagisawa asserts a strain which has a weaker agglutinability and is less liable to be absorbed can be obtained, but these changes are only transitory in nature; and the proper nature of the bacillus is regained by being passed through the animal body twice or recultivating on common agar. The results of the anti-infectious experiment with the treated bacilli and the immune serum proved that they have more incomplete combinations with the immune substances than the normal strain has. The typhoid bacillus that has been passed through the immunized animal body has a clearly augmented and more spontaneous agglutinability. This change in the biologic nature of the bacillus is permanent. The passed bacilli have a remarkably augmented susceptibility to the specific opsonin and thus show a high percentage of phagocytosis. They also have a higher antigenic power than the bacilli that have been passed through the normal animal. A stronger active immunization developed in the mouse to which the treated bacilli had been injected as vaccine, than was met with in the case of common vaccine.

Influence of Overfeeding on Liver Tissue.—Kusano endeavored to determine the cause of pathologic changes of the so-called Laennec's hepatic cirrhosis. The author was able to cause a circular type of cirrhotic changes in the liver of rabbits by feeding with carbohydrates (cane and grape

sugar), protein (casein) and peptone. The changes in the liver vary with the food. With carbohydrate feeding the atrophic changes of the parenchyma appear after a long period of feeding. On the other hand, the atrophic change is very marked in the early stage with feeding protein or its splitting product. The supporting tissue is increased in all cases, but it is more marked with protein than with carbohydrates. When each element of the nutrition is given in excess simultaneously the changes are very marked. The characteristics of the changes are the combination of these produced by each element. With regard to Laennec's cirrhosis, the changes in the experiment animals are different from those occurring in man. However, the author concludes that ordinary foods, taken in ordinary amount by man, produce Laennec's cirrhosis according to the internal conditions.

Action of Heat on Testis.—Fukui noted that the application of heat—from 40 to 50 C.—to the testis causes regressive changes in the generative cells.

Journal of Oriental Medicine, Dairen, Manchuria

1: 39-75 (May) 1923

Antidiphtheritic and Antitetanic Serums. T. Suzuki.—p. 39.
Retarding Effect of Sodium Chlorid on Fat Absorption. S. Hattori.—p. 51.
Presence of Yeast in Symbiosis in Animal Body. K. Saito.—p. 57.
Study of Skull Found in Old Tomb Stone of Lio Dynasty Near Sho Hokuzan, Kinshu, Manchuria. K. Koyono and H. Miyamoto.—p. 59.
*Eruptive Disease in Nurslings. J. Shima.—p. 61.
Content of Fibrinogen and Fibrinferment in Internal Diseases. T. Yamauchi.—p. 63.
Influence of Medicaments on Spayed Uteri of Rabbits. S. Hara.—p. 65.
*Examination of Bilirubin in Blood Serum. J. Murakami and H. Nishida.—p. 68.
Tappeiner's Photodynamic Phenomenon in Acid and Alkali Solutions. H. Yanagihara.—p. 71.

Eruptive Disease in Nurslings in China.—Shima has seen ten of these cases. The usual symptoms are fever, lethargy and diarrhea. The fever continues for about two or three days. The eruption generally resembles that of measles; in a few cases it is not unlike that of scarlet fever. The eruption appears on the first or second day after the decline of fever and continues for three or five days. Afterward there are no signs of desquamation or pigmentation. The blood findings are leukopenia; lymphocytosis; decrease in eosinophil leukocytes. There is no contact infection between patients.

Determination of Bilirubin in Blood a Diagnostic Aid.—Murakami and Nishida have found the determination of bilirubin in the blood useful for diagnosis of gallstones, jaundice, poisonings, malignant anemia and heart insufficiency.

Lancet, London

1: 1091-1142 (June 2) 1923

Glimpses of Higher Medicine. A. E. Garrod.—p. 1091.
Empyema in First Two Years of Life. H. C. Cameron and A. A. Osman.—p. 1097.
*Congenital Defect of Pectoral Muscles. E. B. Morley.—p. 1101.
Experimental Production of Fatal Nephritis. C. C. Twort and H. E. Archer.—p. 1102.
*Case of Cerebral Abscess in Child. J. P. Parkinson and L. R. Broster.—p. 1107.
*Case of Hydatid Disease. H. C. Lees and J. Ramsay.—p. 1107.
Case of Complete Inversion of Uterus. H. Cohen.—p. 1108.

Congenital Defect of Pectoral Muscles.—Eight cases of defect of the pectoral muscles are described by Morley, all in healthy males, showing four different degrees of defect. In no case was the patient aware of the condition and no lack of muscular power could be discovered. In no case was the nipple absent or displaced. In all cases some representative of the pectoral anlage was present, even if only a small clavicular slip. In one case, there was some degree of bilateral defect; in the remaining cases, five were on the right, two on the left. In two cases totally different types of congenital abnormality were found in other members of the family.

Cerebral Abscess in Child.—In the case cited by Parkinson and Boster, that of a child, aged 4 years, the abscess of the brain was secondary to lung disease. It eroded through the bone of the skull and formed a tumor beneath the scalp. There was no optic neuritis, no vomiting, no headache, except after a fit, and the child seemed quite well, except for the signs of bronchitis. When the tumor first appeared it resembled a subperiosteal gumma, the edges being hard, while the center fluctuated. This idea of a gumma was supported by the fact that the father was suffering from a syphilitic nerve lesion. The Wassermann reaction in the blood was negative, and the evacuated pus contained staphylococci. It was also peculiar that the abscess tracked directly through the bone to the exterior, without leaving any pus in the extradural space.

Hydatid Disease of Kidney.—Ramsay relates the case of a man who passed in the urine "a thick fleshy substance with a thin covering." Examination of the substance showed a thin-walled collapsed cyst of about the size of a walnut, and three fragments of a cyst or cysts, the latter slightly blood-stained. Typical hooklets were found on microscopic examination.

1: 1143-1198 (June 9) 1923

Lecture on Choroid Plexuses and Ventricles of Brain as a Secreting Organ. J. Bland-Sutton.—p. 1143.
*Bed Isolation and Conveyance of Infection within Ward. F. Thomson.—p. 1146.
*Treatment of Diabetes Mellitus with Insulin and Carbohydrate Restriction. G. Graham and C. F. Harris.—p. 1150.
Technic of Blood Platelet Counting in Man. R. G. Bannerman.—p. 1154.
Dual Personality. R. W. Riggall.—p. 1155.
Case of Coexisting Uterine and Ectopic Gestations. J. A. Berry.—p. 1157.
Syphilis Isontium in School Children. H. Sheasby.—p. 1158.

Ward Contagion and Bed Isolation.—In Thomson's experience "bed isolation" can do a great deal to prevent cross infection, and in certain circumstances is a most useful method of isolation.

Insulin and Carbohydrate Restriction in Treatment of Diabetes.—In two severe cases and in one milder case, a diet was given consisting almost entirely of protein and fat, but including 16 gm. of sugar in the form of vegetables; the caloric value varied according to the condition of the patient. A dose of insulin was given once a day, or very occasionally twice a day. No extra carbohydrate was given until the blood-sugar before the insulin injection had been below 0.12 per cent. for a considerable number of days. This plan differs from that which has been used by Banting. The usual plan adopted has been to give insulin two or three times a day together with a certain amount of carbohydrate. The two patients in this series with severe diabetes keep well and continue to improve. It would appear that, provided too much destruction has not taken place in the initial attack of the disease, there is some chance that the surviving beta cells of the islands of Langerhans may recover their full activities. In order to treat patients on these lines it is essential that a certain number of determinations of the blood sugar should be made. The patient should be treated at first with the usual method of two days' starvation in order to get the urine sugar free, if possible. Whether this is successful or not the diet should be gradually increased to about 1,260 calories, made up of protein and fat, with 16 gm. of sugar in the form of vegetables. The blood sugar should then be determined in order to gage the dose of insulin required. If the blood sugar is normal a dose of 5 units may safely be ordered for an adult; if it is higher than 0.13 per cent. a dose of 10 units can probably be given in safety. On the next day the morning blood sugar should be determined, and the blood sugar again determined four to six hours after the insulin injection. If the blood sugar falls below 0.10 per cent. and no unpleasant symptoms occurred, it may be assumed that the dose is a suitable one. If the blood sugar does not fall so low as 0.10 it is probably better to make no change for another seven days. Then the blood sugar before and four to six hours after the injection should again be determined. If the blood sugar has now fallen below 0.10 per cent. the dose may be considered as suitable. If the blood sugar has not fallen low enough the dose should be increased. Afterward the blood sugar should be determined before the insulin injection at least once a week or fortnight until it falls to normal. The dose should be diminished if any symptoms of overdosage occur. After the blood sugar has fallen to normal the caloric value of the diet can be increased and bread gradually added.

Medical Journal of Australia, Sydney

1: 487-514 (May 5) 1923

Suggestion, with Examples Taken from Mental Hospital Practice. J. Bostock.—p. 488.
Allen Treatment in Case of Diabetes Mellitus; Evidence of Hereditary Factor in Incidence of Diabetes. Late I. E. Ashby.—p. 493.
Aneurysm of Abdominal Aorta as Basis for Delusions, with Some Other Unusual Features. R. F. Jarrett and J. Bostock.—p. 498.
Puerperal Infection; Ligature or Excision of Veins. A. J. Nyulasy.—p. 499.

1: 515-542 (May 12) 1923

Surgical Treatment (Ollier's Method) of Tuberculous Disease of Shoulder Joint. E. D. Ahern.—p. 515.
Problems of Acute Osteo Myelitis. N. G. Sutton.—p. 517.
*New Test for Pancreatic Efficiency: An Aid to Diagnosis of Gallbladder Disease and Certain Obscure Dyspepsias. F. L. Apperly and G. Cameron.—p. 521.
Tuberculous Disease of Hip Joint. C. P. B. Clubbe.—p. 524.
Recurrent Subluxation of Hip of Traumatic Origin. A. V. Meehan.—p. 529.
Resistant Syphilis Controlled by Bismuth Injections. E. H. Molesworth.—p. 529.

Test for Estimating Alkali Producing Power of Pancreas.—The test described by Apperly and Cameron is a test for estimating the alkali producing power of the pancreas, one of its most important functions and one for which no other test is used. To measure this alkali directly is probably impossible, it can be measured indirectly by making use of the fact that gastric acidity is normally limited by a reflux of pancreatic alkali from the duodenum, while acid introduced artificially into the stomach is neutralized in a greater or less time by this reflux. The amount is 250 c.c. of a 0.4 per cent., solution of hydrochloric acid. The factors acting on this are (1) pancreatic alkali and (2) the difference between the tensions in the stomach and duodenum, that of the latter being higher on account of the stimulatory effect of the acid on the duodenal mucosa. The rate of neutralization gives a rough comparison of the rates of production of pancreatic alkali in different people, provided there is no obstruction, organic or tonic, to the normal duodenal reflux. The test is carried out in exactly the same way as in the fractional test meal, except that the hydrochloric acid is substituted for the gruel meal. When there is pancreatic defect, the rate of neutralization becomes much reduced, giving a more nearly or even an almost horizontal curve. It is not claimed that this test gives any more complete information about pancreatic function than do other tests, but there is no other test which gives any information regarding the amount of alkali available for reflux into the stomach and regulation to its acidity.

Medical Journal of South Africa, Johannesburg

18: 223-246 (April) 1923

*Administration of Vaccine Per Os in an Outbreak of Enteric Fever. J. H. H. Pirie and A. J. Orenstein.—p. 224.
Tests for Determination of Physical Fitness. E. H. Cluver.—p. 228.
"The Parting of the Ways." S. M. de Kock.—p. 233.

Oral Vaccination for Typhoid.—Pirie and Orenstein report good results from the oral administration of a vaccine made from seven strains of *Bacillus typhosus* including the Rawlings and Hopkins strains, and four isolated in South Africa. The scheme of dosage aimed at was for each patient to receive on three successive days one bile pill and one dose of 40,000 million typhoid bacilli. Of twenty patients, sixteen had been vaccinated and four not. Of the sixteen vaccinated, five died; of the four not vaccinated, three died. Those vaccinated were admitted late in the disease, showing that they were probably in the incubation stage when vaccinated. However, the outbreak was declining prior to the date on which vaccination was commenced, hence the value of Besredka's vaccination cannot, therefore, be said to have been demonstrated definitely on this occasion, but the course of events subsequent to the administration of the vaccine has been such that the authors are of opinion that reasonable grounds exist for presumption of its efficacy.

Sei-I-Kwai Medical Journal, Tokyo

42: 1-7 (April) 1923

*Effects of Human Placenta and Bovine Corpus Luteum on Growth of Transplanted Animal Tumors. R. Nishii.—p. 1.

Effects of Human Placenta and Bovine Corpus Luteum on Tumor Growth.—Nishii's experiments showed that by the subcutaneous injection of human placenta and bovine corpus luteum no rapid growth of transplanted rat carcinoma and rat sarcoma could be induced. As regards the transplantability of rat sarcoma, there was noted a somewhat high percentage of positive inoculations in injected groups.

Annales des Maladies Vénériennes, Paris

18: 257-336 (April) 1923

*Comparison of Neo-Arsphenamin, Mercury and Bismuth. R. Gonin.—p. 257.
*The Saint-Etienne Antisyphilis Dispensary. C. Laurent.—p. 272.
Colloidal Bismuth in Treatment of Syphilis. Lacapère.—p. 285.
Acute Bubo from Soft Chancre. Gougerot and P. Blum.—p. 287.
Meningeal Reaction After Lumbar Puncture. B. Saad.—p. 293.

Spirillicidal Action of Neo-Arsphenamin, Mercury and Bismuth.—Gonin finds that bismuth is inferior to neo-arsphenamin in its action on the spirochetes in syphilitic lesions. Mercuric cyanid had no action on spirochetes.

Results of Antisyphilitic Fight in Saint-Etienne.—Laurent reports on the work of his free dispensary. The chief remedy used is neo-arsphenamin, in six to eight weekly injections, increasing to 0.9 and 1.05 gm. respectively. The treatment is repeated, but he observed only few recurrences in patients who had had a negative Wassermann reaction for more than a year. A positive reaction is a valuable aid for inducing patients to continue the treatment after disappearance of manifest lesions. During the four years of the work of the dispensary the number of new infections decreased to less than one half, both in the dispensary and in private practice. He quotes his colleague, the military surgeon Grimaud, to the effect that while the gonorrheal infection of the soldiers could be usually traced to the regulated prostitution, not one case of syphilis was contracted in licensed houses. All his last seven cases of syphilis were due to intercourse with married women and uncontrolled prostitution. Married women who were exposed to infection from unfaithful husbands, were treated prophylactically with Lacapère's method (three intravenous injections of 0.45 and 0.6 neo-arsphenamin). He deplores the fact that physicians overlook frequently the necessity of prophylactic treatment.

Archives des Maladies de l'Appareil Digestif, Paris

13: 305-408 (April) 1923

Multiple Carcinoma of Digestive Tract. Cottin and Salos.—p. 305.
*Digestive Hemoclastic Crisis. A. Girault.—p. 320.
Bronzed Diabetes. E. Prado Tagle.—p. 340.
Survey of New Investigations on Gastric Ulcer. L. Lamy.—p. 345.

Digestive Hemoclastic Crisis in Certain Affections of the Digestive Tract and in Cholelithiasis.—Girault found Widal's test alimentary hemoclastic crisis practically constantly in cases of gastric cancer and ulcer and in cholelithiasis. Radical operations are followed within a month by disappearance of the symptom. Gastro-enterostomy only delays the appearance of the hemoclastic shock. The rapid change after operations seems to indicate that the disturbance of the liver is only functional.

Archives de Médecine des Enfants, Paris

26: 129-196 (March) 1923

Pituitary Dystrophies in Pediatrics. P. Lereboullet.—p. 129.
*Osteochondritis as a Congenital Malformation. F. Calot.—p. 150.
Preventive and Curative Value of a Vaccine Against Scarlet Fever. M. de Biehler.—p. 161.
Febrile Prolonged Urticaria. P. Haushalter.—p. 165.
Amebic Dysentery in Paris Child. Perrin, Remy and Zuber.—p. 168.
Mongolian Blue Spot in Alger. Gillot et al.—p. 170.
Sporotrichosis in Children. J. Comby.—p. 172.

Osteochondritis Juvenilis as a Congenital Malformation.—Calot analyzes three cases which have been offered to controvert his theory. He finds that even these cases show that so-called coxa plana is an overlooked congenital malformation.

Médecine, Paris

4: 485-560 (April) 1923

Obstetrics and Gynecology in 1922. L. Devraigne.—p. 485.
*Sterility of Tubal Origin. B. Cunéo.—p. 488.
Atypical Forms of Tuberculosis of the Sex Organs of Women. A. Siredey.—p. 494.

Malignant Chorio-Epithelioma of Uterus. G. Picot.—p. 499.
*Some Menstrual Disturbances. Fontoynont.—p. 502.
Uterine Prolapse and Its Treatment. H. Duclaux.—p. 506.
*Suspicious Death of Infants. M. Duvoir.—p. 508.
*Cryotherapy of Uterus. L. Bizard and R. Rabut.—p. 511.
*Management of Contracted Pelvis. A. Couvelaire.—p. 517.
Vaginal Cesarean Section. C. Jeannin.—p. 519.
*Amnio-Chorionic Pocket. L. Demelin.—p. 523.
*Syphilitic Affections of Sex Organs. E. Lévy-Solal.—p. 526.
Treatment of Ruptures of Uterus. J. Lemeland.—p. 535.
*Gastro-Intestinal Hemorrhages of the New-Born. H. Vignes.—p. 538.
*Treatment of Epidemic Pemphigus of the New-Born. G. Sauphar.—p. 542.
Serodiagnosis of Pregnancy. R. Daunay.—p. 547.

Sterility of Tubal Origin and Its Treatment.—Cunéo reviews the topography of the adnexa and the pathologic changes of tubes, which may cause sterility. In occlusion of the fimbriæ, the best operative method is to use the ovary to keep the tube open (ovario-salpingorrhaphy).

Some Menstrual Disturbances.—Fontoynont deals with menorrhagias in malaria. He believes they are caused by increased fragility of blood corpuscles. Quinin, which is necessary in treating the malaria, has a bad influence on menorrhagia. He recommends administration of dry serum by mouth in the period between menstruations. He prefers serum from animals that have been bled repeatedly.

Suspicious Death of Infant Due to Latent Bronchopneumonia.—Duvoir emphasizes the importance of seeking for evidences of bronchopneumonia in cases of sudden death of babies. Sometimes the mother accuses herself of having choked the child accidentally.

Cryotherapy of Uterus.—Bizard and Rabut use the freezing method (cryocauterization) in chronic affections of the cervix.

Therapeutic Indications in Moderate Narrowing of Pelvis.—Couvelaire advises cesarean section in every case of disproportion between head and pelvis that is early diagnosed.

Amniochorionic Pocket.—Demelin discusses the complications which may occur if the amniotic membrane is separated during labor from the chorion by transudation of fluid. The diagnosis is made by finding another sac. A caput succedaneum may develop before the second membrane (amnion) breaks. The membrane may descend to the vulva, while the head remains at the upper narrow diameter or above it. The uterus then follows closely the shape of the body and forms one or two bands.[29] Labor makes no progress in spite of artificial rupture of the second membrane; meconium may appear and the heart sounds of the fetus begin to change. Attempts at version or high forceps usually fail in such cases. Even extraction after basiotripsy is difficult. The original cause of the condition is a wrong direction of the uterus contractions, due to malformation of the sac or laxity of abdominal muscles. In the beginning of labor, changing to recline on the side opposite to the inclination of the uterus should be tried. A large compressing dressing is applied if the presentation is correct. Otherwise tampons under the bandage may correct it.

Syphilitic Affections of Sex Organs.—Lévy-Solal emphasizes the possibility of a syphilitic etiology for sterility which resists other treatment. In a rachitic pelvis, hereditary syphilis may have been an important predisposition.

Gastro-Intestinal Hemorrhages of the New-Born.—Vignes recommends transfusion of mother's blood in severe cases of melena of the new-born. He injects slowly 20 c.c. of blood into the sagittal sinus at the posterior angle of the anterior fontanel. In six out of nine severe cases thus treated, the infants recovered. The mortality is 50 per cent. in average cases.

Treatment of Epidemic Pemphigus of the New-Born.—Sauphar points to the inconsistency of calling the pyodermia with large quickly developing pustules, which occurs in babies, a pemphigus. Syphilitic pemphigus appears in the first weeks and is only exceptionally found in the second month. It affects the extremities almost exclusively, while the so-called epidemic pemphigus is usually localized on the buttocks, and around the abdomen. It is practically an impetigo; the etiology is infectious (usually staphylococcus) and the affection should be treated accordingly. Change of alimentation has no influence. Ointments are not advisable in such infectious processes, because they spread the germs. A firmer paste is preferable. He had still better results with Milian's lotion: brilliant green 0.25 gm., crystal violet 0.25 gm., 90 per cent. alcohol 150 gm. The diseased skin is washed with soap and the lotion is applied on a piece of cotton. It is neither toxic, nor caustic. The effect was almost instantaneous.

Nourrisson, Paris

11:81-144 (March) 1923

*Tuberculous Osteoarthritis in Infants. A. Broca.—p. 81.
*Roger's Disease in Infants. Gautier and Megevand.—p. 93.
Dystrophia of the Occipital Bone. Morlot and Remy.—p. 99.
*Mental Disturbances in Tetany. H. Lemaire.—p. 103.
*Survey of Hereditary Syphilis. G. Blechmann.—p. 114.
Experimental Rachitism. A. B. Marfan.—p. 121.

Tuberculous Osteoarthritis in Infants.—Broca has found tuberculous arthritis exceptional before the age of 6 to 8 months. Diagnosis of the resulting pseudoparalysis is easy when located in articulations accessible to palpation. The child does not move the limb, and cries if it is lifted; local pressure will show that the tender point is close to the epiphysis. With signs of rachitis in a child fed from bottle with oversterilized milk, specific treatment for scurvy should be tried, even if the gums are normal. If the pain is located in the upper femur or in the spine, diagnosis is more difficult, but restricted movements of the hip, and curving of the spine suggest a tuberculous lesion. The radiograms of two children showed an opaque line, probably from extravasated blood, at the junction of the shaft of the femur and the epiphyseal cartilage. This was accepted as differentiating scurvy from rachitis. Broca always suspects scurvy with pain in the limbs. He has seen children, near to death, cured in a few days by lemon juice, after several physicians had given the diagnosis of Pott's disease. The spine was stiff and curved, but the pain was manifest only when the limbs were touched. He believes Pott's disease is rare in infants, and that it is frequently confused with rachitic curvature of the spine. When the seated child stoops with a general curve of the back which quickly disappears when placed prone, and lordosis appears in the dorsolumbar region when the feet are raised, Pott's disease may, as a rule, be excluded. One infant, aged 16 months, showed dorsolumbar kyphosis when sitting on its mother's lap, but when placed on its abdomen a slight hump persisted at the two lower dorsal vertebrae. The prognosis is unfavorable, as in all surgical tuberculosis in infants. Laxity of joints and muscular weakness in infants with rickets facilitate sprains which are easily diagnosed in superficial joints, but are frequently misinterpreted in the hip joint. He does not treat infants for coxalgia, but he does not allow them on their feet. When suppuration occurs, the infant seldom survives.

Roger's Disease in Children.—Gautier and Megevand had recently four patients, three infants, aged 1 and 6 months, and a girl, aged 12 years. The most important symptom was the systolic murmur in the upper part of the precardiac region, on the median line, not always accompanied by a thrill. In one of the infants the murmur was scarcely perceptible. One of the infants is not ordinarily cyanotic, but becomes cyanosed, when the murmur disappears for a few seconds.

Mental Disturbances in Tetany of Early Childhood.—Lemaire found twenty-two children with mental disturbances among forty cases of tetany. These disturbances, which may be emotional, such as rage and fear, or perceptional, such as visual hallucinations, appeared mostly at the age of 2 or 3 years, but some became evident in the fifteenth month. The emotional outbursts are pathologic, and frequently terminate in a swoon, apnea or spasms of the glottis. The convulsions and emotional disturbances always became attenuated and disappeared under treatment with calcium chlorid and phosphorated cod liver oil, but the muscular hyperexcitability resisted the treatment, which therefore had to be intensified and prolonged to effect a complete cure.

Survey of Hereditary Syphilis.—Blechmann has interrogated French and foreign specialists on hereditary syphilis, and has found that most authorities recognize an increasing fre-

quency of early manifestations of inherited syphilis. Denéchau reported 50 per cent. syphilitic in a children's hospital. Barbier and others had found an increase in Parrot's disease; Lesage had abandoned mercury in treatment. Pinard uses arsenic. Hallé thinks mercury would have cured every case that has yielded to arsenic. Morquio of Montevideo advocates inunction with 2 gm. mercurial ointment daily, for breast-fed infants, and 2 gm. potassium iodid for the mother. Most pediatrists prefer alternate use of mercury and arsenic. Renault divides hereditary syphilis into three groups of which the first includes palmoplantar pemphigus, cutaneous and mucous eruptions, Parrot's pseudoparalysis, enlargement of liver and spleen, and a special anemia. He treats this group with intravenous injections of neo-arsphenamin in doses of 1.33 cg. per kilogram, repeated weekly, ten times, or until cured, renewing the series after an interval of two or three months if necessary. Hallé believes reported cures illusory, and desires statistics of reexamination two or three years later, which he thinks would show a great number of deaths, probably attributed to other causes. Marían has a good opinion of the eutrophic action of both arsenic and mercury. Findlay and others insist on the supreme importance of systematic treatment of the mother during pregnancy. Pinard urges that the only rational way to prevent the birth of damaged babies is to inform the parents; others suggest "incrimination of the preceding generation," or "treatment without explaining its nature," bearing in mind the safeguarding of the family as well as of the infant.

Presse Médicale, Paris

31: 505-516 (June 6) 1923

Titration of Organic Acids in Acidosis. Labbé et al.—p. 505.
*Artificial Pneumothorax in Children. Armand-Delille et al.—p. 506.
*Pathology of the Sympathetic System. C. Abadie.—p. 510.
Roentgen Examination of Thoracic Aorta. A. Mougeot.—p. 511.

Artificial Pneumothorax in Children.—The experiences of Armand-Delille and his co-workers in this line have already been mentioned in these columns. This report is illustrated. They confirm the feasibility of the procedure in children. The pneumothorax proved a success in all but five of the twenty-two cases, among 230 tuberculous children, in which conditions indicated the advisability of compressing the lung.

Pathology of the Sympathetic Nervous System.—Abadie recalls his statements, in 1897, that glaucoma is not a disease of the eye but of the sympathetic nerve innervating the vessels of the eye. Later he wrote "Probably along the whole chain of the sympathetic system, disturbances in the innervation of the vessels are liable to induce pathologic conditions in certain organs and viscera. We ascribe these pathologic conditions to the organ itself, when in reality they are secondary to the hampering of the circulation from the primary disturbance in the nerve supply." Time has confirmed the correctness of this view. Leriche's success with periarterial sympathectomy in treatment of causalgia, mal perforant, Raynaud's disease, etc., is further testimony in this line. Abadie suggests that possibly this same mechanism is responsible for certain pathologic conditions in the kidney. If this proves to be the case, a harmless periarterial sympathectomy might correct the abnormal conditions in the circulation, and arrest the kidney disease, just as we strive to influence glaucoma.

Revue de Médecine, Paris

40: 129-192 (March) 1923

*Tuberculosis of the Spleen. M. Roch.—p. 129.
New Alkaloid from Calabar Bean in Therapeutics: Geneserin. E. Lebrun.—p. 182.
Recent Literature on Cerebrospinal Fluid. Godlewski.—p. 189. Cont'd.

Tuberculosis of the Spleen.—Roch remarks that medical treatment is generally futile but surgical measures have often given brilliant results. After elimination of leukemia, malaria, syphilis, cirrhosis of the liver and amyloidosis, the diagnosis of tuberculosis or tumor in the spleen is almost certain, and operative measures should be advised without delay. The entire spleen may not have to be removed if the lesion can be excised, but this exposes to complications more than splenectomy.

Revue Médicale de la Suisse Romande, Geneva

43: 129-208 (March) 1923

*Respiratory Disturbances in Epidemic Encephalitis. Roch.—p. 129.
Treatment of Syphilitics. G. Cornaz.—p. 133.
Bacillary Dysentery; Eight Cases. de Morsier and Guder.—p. 149.
Treatment of Varices and Leg Ulcers. F. Blanchod.—p. 155.
Recent Literature on the Pituitary. G. Bickel.—p. 161.
Tertiary Ulcerative Syphilid of Uterine Cervix with Positive Wassermann Reaction in Unsuspected Syphilis. P. Sylvestre.—p. 171.
Case of Early Malignant Syphilis. P. Sylvestre.—p. 172.
Ophthalmia Neonatorum. E. Bourquin.—p. 177.
Propaganda Against Venereal Disease. E. Lardy.—p. 179.

Respiratory Disturbances in Epidemic Encephalitis.—Roch was inclined at first to ascribe to hysteria the paroxysms of dyspnea presented by a young man after an acute attack of epidemic encephalitis. But he finally accepted them as sequelae of the disease; he has found a few instances of similar respiratory disturbances on record. His patient hid in a corner when the distress, cyanosis and suffocation developed suddenly. The attacks sometimes returned every hour but were less frequent when the mind was diverted. Others have reported paroxysms of tachypnea, "respiratory tics," Cheyne-Stokes breathing or pauses of several seconds between breathing movements. Babinski has published a case with paroxysms during which there were only six respirations to the minute.

43: 273-336 (May) 1923

*The Tuberculosis Bill. E. Olivier.—p. 273.
*Time Curve of Sedimentation. E. Gueissaz.—p. 296.
Manual Vibratory Massage. V. de Senarclens.—p. 305.
Sciatica and Phlebitis in Serum Sickness. S. Katzenelbogen.—p. 316.
Hermaphrodism. P. Yakowleff.—p. 319.

The Tuberculosis Bill in Switzerland.—The public health service of Switzerland has published the text of a proposed law to regulate the application of measures against tuberculosis, and Olivier proposes certain modifications. He pleads for compulsory notification of every case.

Sedimentation of Red Blood Corpuscles as Aid in Diagnosis.—Gueissaz remarks that the sedimentation velocity test gives conflicting findings in obstetric cases. The speed of sedimentation is accelerated when there is a focus of inflammation or a cancer, and also in the second half of pregnancy. Under other gynecologic conditions, the findings are conflicting.

Archivio Italiano di Chirurgia, Bologna

7: 113-220 (April) 1923

*Tumors and Cysts in the Pancreas. P. Marogna.—p. 113.
*Access to Base of Brain Through Brow. P. Bastianelli.—p. 140.
*Nonspecific Epididymitis and Orchitis. G. Crescenzi.—p. 145.
*Cystadenoma of the Bladder. G. Sacchi.—p. 161.
*Neoformation of Bone and Cartilage from Grafts. B. Polettini.—p. 169.
*Benign Tumors of External Genitals. F. de Gironcoli.—p. 177.
Calculi in Both Kidneys and Right Ureter. F. Rossi.—p. 204.

Tumors and Cysts of the Pancreas.—Marogna reports a case of a tumor in the pancreas of a woman aged 45 which proved to be an actual hypernephroma of the pancreas, due to aberrant suprarenal tissue. In the second case the tumor was a primary sarcoma of the tail of the pancreas, and the man succumbed to sarcomatosis of the viscera three months after its removal. The stump of the pancreas was ligated and buried; in both, the stump was transformed into fibrous tissue to such an extent that there seemed to be no danger of escape of pancreatic juice into the abdomen. In a third case the tumor proved to be a cyst in the pancreas and 2 liters of fluid were removed from it. The fistula persisted for seven months before final healing. Marogna has demonstrated on animals the feasibility of suturing the pancreas stump directly to the bowel as an outlet for the pancreatic juice after resection of the head of the pancreas. Kausch and Tenani have applied this technic successfully. In case a fistula should persist refractory to all measures, Tusini suggests joining the fistula directly with the intestine, but has had no clinical experience with this method. The Cammidge reaction in the three cases reported was constantly negative; attempts to promote the healing of the fistula in the third case by dietetic measures had no effect.

Access to Base of Brain Through the Brow.—Bastianelli reports the application of the Schloffer-Duret frontal method,

without exenteration of the orbit, in a case of brain cyst in a boy of 15. The technic followed was similar to that of Frazier's operation on the pituitary through the anterior cranial fossa in 1913. Bastianelli's patient survived eighteen days, and the operation allowed extensive access to the base of the brain exposing to direct inspection the optic nerve, the chiasm and the sella turcica. There seemed to be a cyst to the left of the sella; fluid weighing about 150 gm. escaped, followed by profuse hemorrhage from the depths. The boy seemed to be doing well after the operation for two weeks, when rapidly fatal meningo-encephalitis developed. The hemorrhage must be ascribed to the sudden change in pressure after removal of the fluid. In combating the hemorrhage, the bone flap was torn off, so the skull could not be closed as intended, and this was probably responsible for the secondary infection. Necropsy was not allowed. Bastianelli improvised an incubator to preserve the bone until he was ready to suture it in place: He implanted the bone flap in the subcutaneous tissue of the gluteal region of an elderly person.

Nonspecific Epididymitis and Orchitis.—Crescenzi gives details of five cases in which only the staphylococcus could be cultivated from the urine, and nothing to suggest tuberculosis or syphilis was found at the operation.

Cystadenoma of the Bladder.—The growth was successfully removed by a suprapubic incision as profuse hematuria compelled intervention. The woman, aged 50, had previously been treated for cystic tumors of the mamma, multiple myomas of the uterus and a subcutaneous lipoma.

Formation of Bone and Cartilage from Grafts.—Polettini calls attention to the growth of bone and cartilage which he obtained in a large proportion of rabbits in which he had grafted scraps of cartilage, bone or aorta under the skin of the ear. Nothing of the kind was ever observed when the grafts were implanted in the back. The region consequently, as well as the substance implanted, is a factor in the outcome.

Neomalignant Tumors of External Female Genitals.—Gironcoli compares—with seventy-five cases on record—two cases from his own service. In one of his cases the tumor was 12 cm. long, grew from the labium on a pedicle 3 cm. long, and weighed 500 gm.

Rivista di Patologia nervosa e mentale, Siena

29: 61-124 (May 15) 1923

*Lesions of the Optic Nerve. D. Cattaneo.—p. 61.

Degeneration and Regeneration in the Visual Apparatus After Lesions in the Optic Nerve.—This entire number is devoted to Cattaneo's study of this subject, with five colored plates of the histologic findings. The research was done on rabbits, fowls and pigeons.

Anales de la Facultad de Medicina, Montevideo

8: 171-290 (February) 1923

*Metrorrhagia in Diabetes. A. Navarro.—p. 171.
Mammary Plus Perimammary Cancer. A. Lamas.—p. 175.
Fracture of Skull with Anarthria. M. Albo.—p. 180.
*Acute Postoperative Ileus. L. P. Bottaro.—p. 182.
*Stenosis of the Esophagus. C. Butler and J. C. del Campo.—p. 193.
*Suicide by Multiple Stab Wounds. J. May.—p. 197.
Hypoglycemia Following Parenteral Injection of Sugar. Varela Fuentes and Rubino.—p. 215.

Metrorrhagia in Diabetes. — Navarro relates that the metrorrhagia, ten years after the menopause, in one of the three cases reported, subsided when the diet was regulated to combat the mild diabetes which had been known for several years. The cervix was rather large, and when the metrorrhagia returned, a year or two later, during his absence from town, the physician consulted advised resection of the cervix. Fatal diabetic coma developed in twenty-four hours after the operation. In Navarro's second case, the uterine hemorrhage was alarmingly profuse, and persisted after twice curetting. The urine showed 3.2 per cent. glucose, and under alkali, bromid and antipyrin, the diabetes was brought under control, and there has been no return of the metrorrhagia for two years to date. This patient was a nullipara, aged 32. In the third case the metrorrhagia developed at the age of 79. The woman is robust, but for fifteen years has had to diet occasionally to keep the urine free from glucose, and during the last eight years a tendency to metrorrhagia has been observed during the periods of glycosuria. Navarro interprets this as a simple metritis of diabetic origin. The slight hemorrhages subside each time under irrigation with Labarraque's solution and antipyrin and caffein tablets.

Acute Postoperative Ileus.—Three cases in rapid succession were recently encountered in Bottaro's service. In each the bowel had been kinked by adhesions. A hematoma at the stump of the adnexa was the source of the adhesions in all. The ileus became manifest eight to fifteen days after the laparotomy; the indication for the second operation was the local lively antiperistalsis, which persisted notwithstanding lavage of the stomach and mechanical forcing along of the contents of the bowel. In one case delirium from stercoremia, with grave ophthalmia, persisted for two weeks, and the final recovery is ascribed to the systematic treatment with hypertonic sugar solution, up to 2 liters a day, by the vein. Bismuth and camphorated oil were also used; the profuse diuresis during this period was the only basis for hope of a favorable outcome. The woman, aged 44, had borne ten children and aborted five times.

Stenosis of the Esophagus.—There was a fistula into the trachea in both of the two cases described, in men aged 41 and 61. One died, but the other improved under neo-arsphenamin treatment on two different occasions within the year, but he now complains of recurring pains in the thorax.

Suicides from Multiple Slashing Wounds. — May gives twelve illustrations of cadavers with several slashing knife wounds in which it was dubious whether they could have been self-inflicted. The parallel direction of the cuts and the accessibility of the regions are instructive. The suicide generally stands, and often stands in front of a mirror, and although the wounds may be numerous, usually only one is grave enough to be fatal. In case of murder, there is usually only a single wound. If the victim struggles, other slashes are given, but in widely diverging directions; some may cross the primary wound. The slant of the cut is generally transverse, while the slash of the suicide's knife is generally downward and forward, and he turns back the clothing from the region. The assassin strikes through the clothing. The correspondence between the clothing and the wound is very significant, especially with simulated suicide. One of the cases described had seventeen self-inflicted wounds on the skull and others on the abdomen, left forearm and neck. The man died the same day and necropsy showed acute edema of the lung.

Archivos Latino-Amer. de Pediatría, Buenos Aires

17: 241-320 (April) 1923

*Facial Paralysis in Infants. E. Davidsohn.—p. 241.
*Leprosy in Children. E. Meirelles.—p. 250.
Stripes of Scleroderma in Girl of Seven. Salvador Burghi.—p. 270.
*Tumor in Left Occipital Lobe. J. M. Obarrio.—p. 282.
Bronchopneumonia with Aphasia in Girl of Eight. E. M. Claveaux.—p. 296.
Phlegmonous Conjunctivitis. Two Cases. J. Salterain and J. Bonaba.—p. 301.

Facial Paralysis in Infants.—Davidsohn describes instances of congenital, obstetric, and acquired types of facial paralysis in infants. The congenital form is usually bilateral, is accompanied by other paralyses, especially ophthalmoplegia, and seems to be permanent. The obstetric is usually unilateral, and lasts only for a few days or weeks, but exceptionally it may persist after improving to a certain extent under electricity. The nerve responds normally to electric tests, but the mind seems to have lost control of it, just as speech is lost when a child early becomes deaf. It may be possible to overcome it by training later. Acquired facial paralysis may follow local or general infectious processes. When facial paralysis follows diphtheria, it usually subsides spontaneously, but in Wolff's case it persisted for five weeks, showing a partial reaction of degeneration, and then disappeared three weeks later after antitoxin treatment (12,000 units). One infant with inherited syphilis developed paralysis as whooping cough and varicella developed together, but it subsided when neo-arsphenamin treatment was continued.

Sudden high fever in one infant, aged 11 months, was accompanied by facial paralysis, with reaction of degeneration. The fever subsided in three days but the paralysis persisted. A month later another infant in the same house presented the identical clinical picture, and four weeks later two other children in the house developed acute epidemic poliomyelitis, and one died. The facial paralysis in the first two cases subsided after a few months, although the reaction of degeneration had been complete at first. The isolated facial paralysis was diagnosed at the time as a form of acute poliomyelitis but, in spite of the hygienic measures adopted, the three other cases followed at intervals of four, two and six weeks. Facial paralysis of rheumatic origin has not as yet been reported in an infant.

Leprosy in Children.—Meirelles reports a total of 116 cases of leprosy in children, at Rio de Janeiro, in the last twenty-one years. Only 3 were infants; 6 others were between 2 and 6 years old. He urges separation from leprous parents at once after birth. Congenital leprosy seems to be extremely rare, the cases in children being all from contagion. Both parents were leprous in one family and one child living with them developed leprosy at the age of 7, while a second child, entirely removed from this environment at once after birth, has developed to sturdy manhood.

Tumor in Occipital Lobe.—Obarrio calls attention to the symptoms in the boy, aged 9, with bilateral choked disk, which enabled the localization of the brain tumor and its successful removal. The left eye was blind; the reaction of the retina to light, the way in which the child looked to the right of a person in order to see him, and kept his head turned to the right, were instructive, as were also the visual hallucinations, and the way in which the figures seen in the hallucinations moved from left to right, and slanted downward. The hallucinations were of a man on a bicycle, a cart with white and black horses, etc., but no hallucinations of fire.

Brazil-Medico, Rio de Janeiro

1: 277-286 (May 19) 1923

*Sensibility of Lungs to Normal Stimulant. M. Ozorio de Almeida.—p. 277.
Parallel or Tail-to-Tail Copulation in Differentiation of Mosquitoes. C. Pinto.—p. 278.

Peabody's Method of Studying Excitability of the Lungs by Carbon Dioxid.—Ozorio de Almeida declares that the results obtained by Peabody in his clinical studies of respiration agree perfectly with those of his own research. The whole allows the calculation of a standard index, which he calls the "coefficient of regulation of pulmonary ventilation." This coefficient is the index of the true excitability of the respiratory centers, as it reveals the sensitivity of the respiratory apparatus to its normal stimulant.

Revista de Medicina y Cirugía de la Habana, Havana

28: 361-392 (May 25) 1923

Child Welfare Work in Cuba. Gonzalo Aróstegui.—p. 361.
*Anomalies of Obturator Artery. Elpidio Stincer.—p. 382.

Anomalies in Obturator Artery.—Stincer has occasionally found the obturator artery very large and tortuous, branching from the femoral artery about 3 cm. below Poupart's ligament. It crossed the femoral vein and passed through the femoral ring into the pelvis. Without anastomoses, it wound its way to the subpubic passage, and then continued the usual course. This anomaly is liable to entail edema of the leg by compression of the femoral vein. Two illustrations accompany the article.

Siglo Médico, Madrid

71: 453-476 (May 12) 1923

*Balmis' Vaccination Mission. A. Gimeno.—p. 453.
Trauma of Skull and Brain. V. Fidalgo Tato.—p. 457. Cont'd.
*Malarial Retinitis. M. Marin Amat.—p. 460.
Vacuum Extraction of Cataract. L. Koeppe.—p. 461. Cont'd.

Balmis' Vaccination Mission.—Gimeno relates that the Spanish government in 1803 organized an expedition to take Jenner's new vaccination to the Spanish territories in the New World. Balmis was in charge of the expedition, and the party consisted of two other physicians, several orderlies, and twenty children who carried vaccine lymph inside their arms. The mission spent three years in the New World, passing from arm to arm the lymph brought from Europe, and carrying it beyond America to Oceania and Asia. Porto Rico was the first stop, then Caracas. Humboldt in 1811 referred to this mission as certain to be always memorable in the annals of history. Balmis worked in Havana and Yucatan, Pastor in Guatemala and Tabasco and Salvany in northern South America, all reuniting in Mexico. Balmis then sailed with twenty-six children for the Philippines and China. Vaccine had already been sent from Europe to China, but it had always spoiled on the way. Balmis reached home in 1806, having carried Jenner vaccination entirely around the world. During his absence, war in Europe had been continuous. The Portuguese had introduced vaccination into Argentina, Peru and Chile, a few months before Salvany reached there, a year and a half after the Balmis party had reached the New World.

Ocular Lesions from Malaria.—Marin Amat reports a case of bilateral diffuse choroidoretinitis and unilateral iritis. There was a history of recent malaria for which the man had taken 4 gm. of quinin in two and a half months, and had had no fever for the month since. Under eight parenteral injections of 4 or 2 c.c. of milk in nine days the lesions subsided, and after two days of quinin, normal vision was completely restored.

Archiv für Gynäkologie, Berlin

118: 445-655 (May 12) 1923

*Transplantation of Ovaries. P. Sippel.—p. 445.
*Retroperitoneal and Mesenteric Tumors. H. H. Schmid.—p. 490.
*Reciprocal Relations Between Endocrine Glands. Serdjukoff.—p. 560.
*Pathogenesis of Eclampsia. I. Obata.—p. 586.
*Puerperal Gangrene of the Uterus. E. Lehmann.—p. 625.
*Septic Abortions. E. Mathias and F. Pietrusky.—p. 645.

Transplantation of Ovaries.—Sippel relates that for years a special study has been made in the women's clinic at Berlin of ways and means for improving conditions with infantile genital organs and in the premature menopause. Ovarian extract by mouth or injection always failed, and never was anything observed suggesting rejuvenation in the Steinach sense. Better results were obtained with transplantation of ovaries which was done in 57 cases. In 9, the woman's own ovary was reimplanted and this almost always succeeded in warding off the premature menopause. The results were very satisfactory in 16 of the remaining 48; in 15 no effect was apparent; in 3 the graft sloughed. The effects did not become manifest till from several weeks to six months after the grafting. In all the cases of failure, the graft had been entirely absorbed and nothing remained but fibrous tissue. The outlook is promising with homotransplants of ovary in cases of infantilism and deficient ovarian functioning; also to ward off a premature menopause after castration, and in certain cases of premature menopause and premature senility. The influence from the autograft generally dies out in from one to three years; with homotransplants it does not last more than a few months. If no effect is apparent, a second grafting may prove successful. The outlook is less favorable when the entire genital apparatus shows infantile conditions, and when the thyroid is generally also defective. There is often a tendency to obesity, doughy face and puffy eyelids with total amenorrhea. No benefit was ever observed from ovarian transplantation in such cases, even with or without supplementary thyroid treatment. The details of all the experiences, both with donor and recipient, are given. Some of the cases demonstrated that the impulse for menstruation comes from the ovum. The ovum can develop to maturity in the total absence of a uterus, or, without ever coming to full maturity, it can induce such ovarian disturbances that operative relief is indispensable. In several cases of severe hemorrhages at puberty the uterus was found infantile; the ovaries were well developed but without a trace of corpus luteum. Only when and while the implant contains functioning corpus luteum is there any chance for true menstruation. Other uterine hemorrhage is a sign of an irritation and not a menstrual process.

Retroperitoneal and Mesenteric Tumors.—Schmid reports three cases of a solid tumor of the mesentery or retroperitoneal space, and compares them with 297 cases he has compiled. The total mortality was 17.6 per cent. The progress of surgery is reflected in the figures of 66.6 per cent. mortality before 1901; 25 per cent. in 1910, and 7.5 per cent. in 133 cases since 1903. The operation is always difficult and tedious. About 50 per cent. of these solid tumors are malignant and women are affected twice as often as men. He summarizes each of the 297 cases.

Mutual Relations Between Endocrine Glands.—Serdjukoff is inclined to agree with those who regard the internal secretions as a highly differentiated phase of general metabolism. An extreme instance of the mutual relations between the endocrine organs is described in which the thyroid, the suprarenals, and the uterus all shared in inducing the severe clinical picture. The uterus presented a cavernous metritis, with periodic erectile phases, and the whole clinical picture vanished as if by magic after hysterectomy. He urges more careful research on the internal secretion of the uterus.

Neutralization of Placenta Toxin.—After confirming on mice and rabbits the toxic action of placental extract, Obata experimented with antiserums of various origins. His research disproves the assumption that the fetus is the source of the toxin inducing eclampsia. The woman's serum seems to lack an antitoxin which normally binds the placental toxin. The serum of women with eclampsia proved unable to neutralize the placental toxin in his tests. His research failed to reveal features of anaphylaxis in eclampsia.

Puerperal Gangrene.—Lehmann shows by a case described that puerperal gangrene of the uterus is the same process as metritis dissecans. It should be called gangrenous phlegmonous metritis. Perforation may occur spontaneously.

Septic Abortion.—In the three years before the war, 15 cases came to necropsy at Breslau, while there were 40 cases in the three years following the war. The women were married in 34 of the 55 total cases.

Klinische Wochenschrift, Berlin

2: 813-860 (April 30) 1923

*Gastroptosis. K. Faber.—p. 813.
*Tetany. E. Melchior.—p. 818.
Theory of Action of Cinchophen. M. Dohrn.—p. 819.
Increased Action of Auricles and Electrocardiogram. Mosler.—p. 821.
*Abortive Treatment of Gonorrhea. Scholtz and Richter.—p. 823.
Preparation of Culture Mediums. Kuczynski and Ferner.—p. 826.
*Mastic Reaction in Cerebrospinal Fluid. V. Kafka.—p. 829.
"Distribution of Roentgen Dose." F. Dessauer.—p. 832. Reply. H. Holfelder.—p. 834.
Incision in Angina Ludovici. A. Niedermeyer.—p. 835.
Addenda to: Agglutination of Fornet's Tuberculosis Reagent in Surgical Tuberculosis. Kohler.—p. 835.
*Spirochetes of Pallida Type in Nonsyphilitic Rabbit. W. Worms.—p. 836.
*Trypanocidal Substances in Human Serum. Rosenthal and Freund.—p. 836.
*Wassermann Reaction in Cerebrospinal Fluid. M. and R. Stern.—p. 836.
Postencephalitic Parkinsonism with Psychic Disturbances. A. Genzel.—p. 837.
Treatment of Wounds in General Practice. W. v. Gaza.—p. 838.
Medical Examination of Students in Tübingen. W. Weitz.—p. 841.

Gastroptosis.—Faber believes that atony of the stomach is a functional disturbance, which does not cause gastroptosis. On the contrary, gastroptosis predisposes to atony, with retarded evacuation. Atony may be found in dyspepsia without gastroptosis. A second form, which he calls roentgenologists' atony, clinically corresponds to a dilatation. It does not always retard evacuation. It sometimes does not induce any subjective symptoms.

Tetany.—Melchior reports the results of more than 1,000 applications of tests after operations. He found an increase of the electric excitability of the ulnar nerve in 30 per cent. of the patients whose operations were for diseases not connected with the thyroid gland. After operations for goiter, the excitability increased in 85 per cent. However, from nine months to more than two years later only three patients still presented the hyperexcitability. Though tetany depends on the parathyroids, these results show that a nonspecific injury (operation) may play a part in it. They also contribute to the explanation of "surgical tetany" after an operation, since latent tetany does not seem to be very rare.

Abortive Treatment of Acute Gonorrhea with Intravenous Injections of Glucose.—Scholtz and Richter report further favorable results with their method of abortive treatment of gonorrhea. They inject 40 c.c. of a 50 per cent. solution of glucose intravenously, and, two hours later, inject locally a colloidal silver preparation. The local treatment is repeated five times daily, and the concentration of the drug increased usually in five days up to 2 per cent. They give four injections of glucose in the first week and two to three in the second. The injection should be given very slowly, and the vein should be as little injured as possible. They had only nine recurrences among fifty-nine patients treated for one to two weeks. Cases with complications, even if only a thickening of Littré's glands, and gonorrhea in women (especially cervical) were not favorably influenced. They believe that the immediate bactericidal power of the local injections is not the most important factor in treatment. They lay more stress on the appearance of a pus consisting of detritus from disintegrated leukocytes. Whenever an injected preparation is not followed very soon by formation of this "silver pus", the preparation used should be changed.

Mastic Reaction in Cerebrospinal Fluid.—Kafka compares the different methods of the colloidal reaction with mastic in cerebrospinal fluids.

"Spontaneous Appearance of Spirochetes of the Pallida Type in an Isolated Nonsyphilitic Rabbit."—Worms inoculated *Spirochaeta dentium* into rabbits. After fourteen days he observed erosions resembling primary syphilis, and they contained spirochetes, which could not be microscopically distinguished from *Spirochaeta pallida*.

Trypanocidal Substances of Human Serum.—Rosenthal and Freund find that human serum contains only trypanocidogenic substances, which are not active before being injected into the animal.

Some New Investigations on the Wassermann Reaction in Cerebrospinal Fluid.—Stern and Stern found that the ultrafiltrates of cerebrospinal fluids which had reacted positively give negative reactions. Ultrafiltrates from the blood serum, however, retained their full potency. This is probably due to the protecting action of serum albumin on the euglobulin fraction which contains the reacting substance.

Medizinische Klinik, Berlin

19: 561-596 (April 29) 1923

Köhler's Disease of Metatarso-Phalangeal Joints. Axhausen.—p. 561.
*Indications for Allaitement Mixte in Infants. A. Reuss.—p. 565. Conc'n.
*Regulation and Significance of Tonus of Blood Vessels. E. F. Müller.—p. 569.
*Ossification of Cartilages of Ribs. H. Wernscheid.—p. 572.
*Mental Efficiency After Hard Bodily Exertion. M. Flockenhaus.—p. 574.
*Examination for Syphilis in Medical Practice. H. Gelbenegger.—p. 575.
Thyroid Treatment of Anemia. H. W. Wollenberg.—p. 579.
Preventive Vaccination Against Varicella. M. Soldin.—p. 579.
Alleged Injury of a Telephone Operator by Electric Current. E. Stier.—p. 582.
Gynecology of Practitioners. E. Runge.—p. 584. Cont'n.
Survey of Medical Jurisprudence. P. Horn.—p. 585.

Indications for Mixed Infant Feeding.—Reuss points out that the secretion of milk starts usually on the third or fourth day after delivery. The single amount taken by the baby in the first two days rarely exceeds 10 or 20 gm. Hence the physiologic loss in weight. There is never an indication for mixed feeding in a baby born at full term, before the third or fourth day, even if the loss in weight is considerable and fever occurs.

Regulation and Significance of Tonus of Blood Vessels.—Müller discusses his experiments on the influence of intracutaneous injections on the number of leukocytes. He demonstrated the intimate relation of the skin to the regulation of the tonus of blood vessels by the experimental leukopenia. It is due to retention of leukocytes in the dilated abdominal vessels. These experiments confirm Glaser's explanation of Widal's hemoclastic crisis as due to changes in the tonus of the vegetative nervous system. Increase of the sympathicotonus prevents alimentary leukopenia in individuals who would otherwise show it.

Ossification of Costal Cartilages.—Wernscheid found in 8 per cent. of children with pulmonary tuberculosis, ossification of the cartilages nearest to the hilus. In four of these six cases the cartilage of the first rib was also ossified. The youngest child was 9 years old. A marked ossification is frequent in benign pulmonary tuberculosis.

Mental Efficiency After Hard Bodily Exertion.—Flockenhaus found immediately after a Marathon run a distinct increase in mental efficiency, when compared with the results of the day before.

Serologic Examination for Syphilis as Obligatory Method in Medical Practice.—Gelbenegger performed systematically the Wassermann test in 1,303 patients of a hospital. It was positive in ninety-five patients. It was negative in thirty-three patients with sequelae of syphilis, but unexpectedly positive in seventy-two patients, in whom neither the history, nor the clinical signs gave at first any evidence of syphilis. He discusses these cases and demonstrates the advantages of a routine examination, though the reaction seems to have been certainly not specific in several instances.

Mitteil. a. d. Grenzgeb. d. Med. u. Chir. Jena

36: 151-440, 1923

*Acute Pseudodysenteric Colitis, Postoperative Gastro-Intestinal Hemorrhage and Ulcers. W. Goldschmidt.—p. 151.
*Thrush Fungus from Standpoint of Gastric Ulcer. E. Kirch and E. Stahnke.—p. 174.
*Typhoid Cholecystitis. E. Fraenkel.—p. 201.
Influence on Metabolism of Extensive Operations for Goiter. E. Grafe and E. v. Redwitz.—p. 215.
Diffuse Cavernous Hemangioma of Rectum. Hennig and Schütt.—p. 235.
*Skeletal Changes as Cause of Calcification. F. Schulze.—p. 243.
*The Thyroid Question. B. Breitner.—p. 265.
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Constitutional-Somatic Types of Different Diseases. V. Orator and H. Pöch.—p. 393.
*Form of Goiter in Connection with Function. E. Gold and V. Orator. —p. 401.
*New Viewpoints in Testing Action of Drugs. V. Orator.—p. 420.

Disturbance in Blood Supply of Digestive Tract.—Goldschmidt's heading includes three different affections, acute colitis, postoperative gastro-intestinal hemorrhage and ulcers, each of which, he says, is traceable to some local disturbance in the blood supply or innervation. This disturbance may result from trauma, disease or an operation. Each segment of the bowel may react in a different way to the influence affecting it, and to different degrees of the same factors. A retroperitoneal hematoma, for example, may entail acute pseudodysenteric colitis or ileus, as the case may be. Thrombosis or paralysis of the vessels, and injury of nerves, direct or by way of the central nervous system, are other factors, but hematomas predominate.

Thrush Fungus and Gastric Ulcer.—The extensive clinical and experimental research related fails to connect *Oidium albicans* with the etiology of chronic gastric ulcer.

Typhoid Disease of the Gallbladder.—Fraenkel reports that the gallbladder of a boy, aged 8, a chronic carrier, was removed as the last resource to restore him to normal life. He was entirely free from symptoms of any kind, and the gallbladder showed no signs of active inflammation although containing typhoid bacilli. It is evident from this and the other cases cited that slight inflammatory processes caused by typhoid bacilli can heal completely, but when there are gallstones—preceding lesions—the bacilli may induce abscesses and necrosis. This is exceptional in the previously healthy gallbladder, and there is evidence to show that typhoid bacilli may sojourn for years in the gallbladder without injuring its walls. In the insane, removal of the gallbladder of chronic carriers may be advisable, but never in the healthy, he reiterates, as the outcome is always dubious, at the best, and is often entirely negative.

Calcification in Disease of the Bones.—Schulze describes two cases of osteomyelitis in boys of 11 and 16 in which the destruction of bone tissue, releasing calcium, had entailed the deposit of calcium in the arteries.

The Thyroid Question.—Breitner presents evidence to sustain his assumption that a special structure of the thyroid corresponds to special function.

Relations Between Endocrine Glands.—Demel, Jatrou and Wallner removed, transplanted or implanted ovaries, thymus tissue and suprarenals in rats, recording the effect on the thyroid, with and without resection of the vagus.

Form of Goiter in Relation to Function.—Gold and Orator in sixty-five cases of goiter, compare the nature of the goiter with the functional symptoms. All confirm the difference between diffuse hyperplasia and adenoma, from the clinical and functional as well as the anatomic standpoint.

Functional Drug Tests of Vegetative System.—Orator's summaries of the clinical picture and response in sixty-three patients demonstrate that most persons react to pilocarpin and to epinephrin in the same way, vigorously or weakly to both. The thyroid controls the reaction.

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*Congenital Syphilis. F. Klee.—p. 29.
Torsion of Ovarian Tumor from Twisting the Body. H. Sellheim.—p. 36.
*Improved Technic for Roentgen Therapy in Gynecology. H. Kufperberg.—p. 41.
Roentgenography in Pregnancy and Childbirth. Id.—p. 49.
*Treatment of Placenta Praevia. W. Stoeckel.—p. 52.
*Mixed General Anesthesia. H. Hellendall.—p. 63.
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*Causes of Backache in Women. P. Haendly.—p. 97.
*Tuberculosis and Pregnancy. O. Pankow.—p. 109.
*Biologic Reactions in Diagnosis of Adnexitis. H. Borell.—p. 132.
*Twilight Sleep in Obstetrics. W. Krönig and L. Schönholz.—p. 161.
*Ether After Laparotomies. K. Frankenstein.—p. 180.
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Biologic Processes in Irradiated Cancer. E. Opitz.—p. 232.
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*Prophylaxis and Treatment of Cracks in Nipples. E. Hinderfeld.—p. 273.
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Disturbances in Third Stage of Labor, and Treatment. J. Strecker.—p. 283.
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*Danger of Infection with Submucous Myomas. H. H. Schmid.—p. 302.
Operations on Large Intestine in Gynecology. A. Rieck.—p. 321.
*Puerperal Endometritis and Thrombosis. M. Schmidtmann.—p. 328.
Italian Literature on Gynecology, 1915-1920. F. d'Erchia.—p. 339.

Fehling's Treatment of Dysmenorrhea and Sterility.—Schmidt says that this method has given satisfaction for ten years at the Bonn women's clinic, but he can find no reference to it in modern textbooks. A fenestrated cannula, 5 cm. long, with flaring mouth, is introduced into the cervix, after curettement, and is left for three days. Then the cannula is changed, and the uterus cavity flushed with 1 liter of a 1 per cent. solution of liquor formaldehydi. The change of cannulas and the irrigation are repeated two or three times, with three day intervals. The woman must stay in bed for five days to allow oversight of the temperature. If it runs up, the cannula must be removed. Of his seventy-seven dysmenorrhea patients, 30 per cent. were entirely cured and 9 per cent. much improved; 17 per cent. were cured for a year or two, but 44 per cent. were not benefited. Conception followed in from one to eight months in 35.5 per cent. of the thirty-one cases of sterility.

Congenital Syphilis.—Klee analyzes conditions in 709 obstetric cases of certain syphilis in 1921, and the effects on the infants of treatment of the mothers.

Roentgenography in Gynecology.—Kupferberg discusses the latest methods for dosage and application of roentgen rays to women.

Treatment of Placenta Praevia.—Stoeckel compares the mortality in the cesarean section group with that in other groups. He proclaims anew the advantages of systematic

cesarean section and refutes the objections to it. He prefers the abdominal intraperitoneal technic.

Twilight Sleep-Mixed Anesthesia.—Hellendall discusses opium-scopolamin-ether narcosis, reviewing his experiences in 674 cases with this combination of twilight sleep and inhalation anesthesia for gynecologic operations. In conclusion, he remarks that an oxygen apparatus must always be ready at hand, as dangerous mishaps are liable to be encountered.

The Legal Term of Pregnancy.—Füth declares that the legally accepted term of 302 days is too short, citing three cases from private practice in which the interval between conception and delivery was at least 329, 334 and 339 days.

Backache in Women.—Haendly states that 25 per cent. of 500 female patients complained of pain in the sacral region or above. Only 25 per cent. of the patients with displacement of the uterus complained of pain, but 50 per cent. of all those with adnexitis, and 90 per cent. of those with ptosis of the bowel complained of backache; 90 per cent. in this last group applied for relief on this account. The women with sagging viscera who were free from backache were all young, under 30. The backache with enteroptosis is a fatigue symptom.

Pregnancy and Tuberculosis.—Pankow says that manifest tuberculosis is influenced unfavorably by pregnancy in fully 75 per cent. of the cases. We have no means for determining beforehand the favorable cases, and hence, instead of trying to individualize, we must make a principle of interrupting pregnancy in all cases of manifest tuberculosis in the first and second stage. In the third stage, the interests of the child should be considered, as it may develop normally if removed at once from the consumptive mother. He adds that the decision to interrupt pregnancy is facilitated by the fact that the children of mothers with manifest tuberculosis seldom survive the first year. With latent tuberculosis, the standpoint is exactly the reverse.

Biologic Reactions in Diagnosis of Adnexitis.—Borell remarks that the tuberculous, gonococcic and septic foci all respond to the so-called specific tests in the same way. Hence they are useless in differential diagnosis.

Twilight Sleep in Obstetrics.—Both the drug and the hypnosis twilight sleep are discussed. They depend for success on amnesia, and the authors suggest that by combining the two methods the desired result might be obtained with minimal means.

Ether After Laparotomies.—Frankenstein pours into the abdominal cavity no more than 30 or 50 c.c. of ether, having found that this serves perfectly to promote peristalsis after the laparotomy. He never witnessed any suggestion of shock in his 423 cases with this treatment. Fully 69 per cent. have been seen since, and nothing to suggest formation of adhesions could be discovered, with one exception, although adhesions had been found at the operation in 32 per cent.

The Eclampsia Question.—Engelmann had a maternal and fetal mortality of 10 per cent. in his 222 cases of eclampsia in the last twelve years. Treatment is by hastening delivery, venesection to 500 c.c., infusion of Ringer's fluid or hypertonic sugar solution, and systematic use of chloral or other sedatives.

Blood Transfusion in Obstetrics and Gynecology.—Hofmann urges immediate reinfusion of the blood after rupture of tubal pregnancy with much hemorrhage. If transfusion of blood is not practicable in treatment of hemorrhage, blood that is not aseptic can be given by the rectum.

Ovarian Epilepsy.—Everke reports the case of a woman, aged 39, who for five years had had epileptiform seizures every two weeks. For six months excessive uterine hemorrhages had much weakened her. On assumption of cancer of the uterus, panhysterectomy was done, and the seizures have never returned during the twenty years since. He has treated two other patients by ovariectomy, and neither has had any return of the convulsions since. In these and in another case the convulsions were connected with menstruation and coitus interruptus. In the latter case, correction of the sexual life alone and the resulting pregnancy banished the seizures permanently.

Treatment of Cracked Nipples.—Hinderfeld applies a cap of the thinnest lead to the nipple, after dropping on it 2 or 3 drops of a solution of 0.5 gm. lead acetate and 0.2 gm. of gum acacia in 30 gm. of distilled and sterilized water. The cap has a broad flat brim and is held in place by two cross strips of plaster. It is removed only to allow the infant to nurse, the nipple being wiped off with a sterile sponge. He insists that prophylaxis and treatment should aim not to toughen the nipple but to keep it soft and flexible.

Danger of Infection with Submucous Myomas.—Schmid urges removal of the uterus rather than excision of a submucous myoma, as 6.4 per cent. of sixty-three women treated by excision at the Prague clinic died.

Puerperal Endometritis and Thrombosis.—Schmidtmann has found other lesions so constantly that he thinks that therapeutic ligation of veins has little chance of arresting the process.

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*Ambard Laws of Elimination of Urea. R. Bauer and W. Nyiri.—p. 257.
*Atypical Tuberculosis of the Kidney. S. P. Fedorow.—p. 264.
Acidification of the Urine by Madder. A. Bauer.—p. 274.
*Spontaneous Rupture of the Kidney. A. Szenes.—p. 276.
*Total Extirpation of Bladder. S. P. Fedoroff.—p. 290.

The Ambard Laws of Elimination of Urea.—Bauer and Nyiri present evidence to sustain the reliability of the Ambard ureosecretory constant as an index of the functional capacity of the kidney. They add that the normal range is wider than was supposed at first, and the Ambard constant does not depend entirely on the urea. The urea content of the serum may be high with healthy kidneys, and low with kidney diseases. Biologic phenomena do not lend themselves well to mathematical equations. Admitting all these drawbacks, the Ambard constant may give good practical results.

Atypical Tuberculosis of the Kidney.—Fedorow expatiates on the importance of the inflammatory process in the kidneys which may be considered a pretuberculous nephrocirrhosis, for which the tubercle bacillus is responsible but in which no tubercles are found. The blood pressure was normal in one of the five such cases he describes in detail. There are no special symptoms to distinguish this form from typical renal tuberculosis, and it can be surmised only from the small number of leukocytes in the urine and the widely scattered single tubercle bacilli or involution forms. He thinks we cannot deny the possibility of a spontaneous cure by shriveling of the one kidney involved. When bilateral, a spontaneous cure seems to be out of the question. With persisting hematuria, pains and persistent fever, nephrectomy should be considered as under other conditions.

Spontaneous Rupture of the Kidney.—Extensive bleeding into the bed of the kidney and profuse hematuria called for nephrectomy; the cure has been complete since. There was a history of occasional attacks of pain in the region during the three years preceding.

Total Extirpation of Bladder.—Fedoroff states that none of the eleven patients treated by a two-stage operation died from the effects of the operation in Bystrow's series (1912) and none in Fedoroff's own five cases, including three physicians. Transplanting the ureters into the bowel puts an almost complete end at once to the pains; the patients are able to sleep, and rapidly recuperate. In one case of villous cancer, there have been no signs of recurrence during the six years to date. This patient was a woman, and the urethra was removed with the bladder. The ureters were implanted in the sigmoid flexure. One patient, a physician, was treated during twenty years for multiple papillomas which eventually became villous cancer. He survived five years after extirpation of the bladder, and for nearly three years felt well and was able to resume his practice. The fatal outcome was not due to pyelitis but to return of the malignant papillomas, probably from inoculation during the removal of the bladder. Roentgenotherapy then gave great relief. The transperitoneal technic is safer and easier. Electrocoagulation after opening the bladder may succeed in certain cases, but if the tumors return, Fedoroff advises not to wait too long before removing the bladder.